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ABSTRACT

To provide a base of information for potential updating of the prevailing high school curricula in Recordkeeping/Bookkeeping, the components of those curricula were examined in relation to the actual job duties of employed bookkeepers--with special focus on entry-level positions and on the effects of computerization of job duties. The questionnaire and interview results show: computerization has reduced the need to understanding bookkeeping concepts, prior school training is infrequently a requirement for securing an entry-level position, and on-the-job training of a few days to a few months is prevalent. It was also found that: the Recordkeeping curriculum appears to be nonfunctional; the terminology of school instruction is often at variance with job terminology; the job duties and job responsibility levels of those with no school training in bookkeeping are indistinguishable from those with only high school training; job responsibility and advancement depend heavily on work experience; journal and ledger work is predominantly carried out by experienced employees, and high school instruction beyond the trial balance is totally unjustifiable. Recommendations for curricular revision are made in accordance with the findings, explicity distinguishing between instruction for small-firm and large-firm employment. (Author/AG)

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SURVEY OF ENTRY-LEVEL BOOKKEEPING ACTIVITIES IN RELATION TO THE HIGH SCHOOL BOOKKEEPING CURRICULUM

Leonard J. West

In Cooperation With

Norman Elliott
Martin Frankel
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and the

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Research Report 73-1

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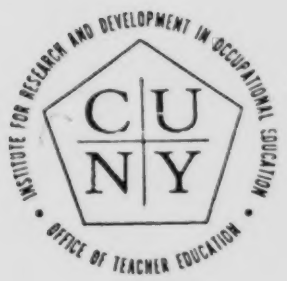

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New York State Department of Labor

The research reported herein was performed at the request of the Bureau of Business Education under VEA Grant No. 72-G-701 from the Office of Occupational Education of the New York State Education Department.

November 1973

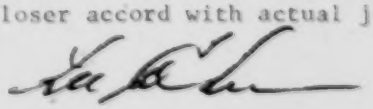
Foreword

The research reported here is one element in the program of activities of the Institute for Research and Development in Occupational Education of The City University of New York. The Institute was established and its activities made possible through the professional support and cooperation of Dr. Robert S. Seckendorf, Assistant Commissioner for Occupational Education in the New York State Education Department.

Under funding from the State Department of Education, the original request by Mr. Hobart H. Conover, Chief of its Bureau of Business Education, permitted inquiry limited to job duties in relation to curriculum components, carried out on a modest scale. Upon examination of earlier comparable investigations, however, it quickly became apparent that there existed the possibility of developing a set of procedures for conducting curricular inquiries into occupational fields that could provide information not heretofore sought in such studies and that have generalizable, not merely local, applicability. In recognition thereof, the inquiry was expanded in scale and scope: a larger probability sample of employees was secured; educational and work-experience background information was solicited and related to job duties and job advancement; at our request, inquiry by Labor Department occupational analysts into the effects of technological developments on job duties and on hiring prerequisites was at a level of detail beyond that common to Labor Department occupational analyses; principally, the two major tactics of a playback of curriculum components to employees and of actual job duties to curriculum makers were both employed.

Fiscal support for the expanded inquiry, on a larger scale than the original State Department of Education funding, was supplied from Institute funds and by the Office of Teacher Education of The City University of New York.

It is hoped that the expanded scale and scope of this inquiry provide not only more precise and pertinent information than was formerly available, but that its procedures will be suggestive for later inquiries aimed at bringing other occupational curricula into closer accord with actual job requirements.



Lee Cohen, Director
Institute for Research and Development
in Occupational Education

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Primary acknowledgement is due the cooperating persons and agencies. Mr. Norman Elliott, Acting Director of the Bureau of Business and Distributive Education of New York City's Board of Education, and Mr. Aaron Toder, Chairman of the Accounting Department at Abraham Lincoln High School in Brooklyn, New York, served as subject-matter consultants. They developed, refined and organized the list of 131 curriculum-derived bookkeeping job duties that make up the largest part of the questionnaire and were primarily responsible for the development of the scale needed to estimate level of job responsibility and for the application of that scale to questionnaire responses. Mr. Toder also undertook detailed analysis of leading high school bookkeeping textbooks. Both gentlemen examined draft versions of the report and made a number of useful suggestions. Mr. Elliott bore with unfailing good cheer my tattoo of requests for detailed information on numerous matters large and small over a period of nearly two years and gave willingly of his time far beyond his formal obligations. Working with him has been one of the investigator's major professional and personal pleasures.

The details of statistical sampling were worked out by Professor Martin Frankel, then at Baruch College of The City University of New York and now at the National Opinion Research Center of the University of Chicago. Dr. Frankel arranged with Mr. Peter A. Ansell, Director of the Bureau of Business Research of the New York State Department of Commerce, for the drawing of a probability sample of private employers in New York City and he closely edited the Technical Appendix that describes the sampling processes both for New York City and for Upstate inquiries.

The occupational analyses that provided information at a level of precision and consequence often beyond that of the questionnaire data were arranged for by Mr. Clement J. Berwitz, Chief, Occupational Analysis-Industrial Services, of the Division of Employment of the New York State Department of Labor (administratively under the State, but receiving technical direction from the U.S. Department of Labor); and they were conducted under the general supervision of Mr. Maxwell Rosenzweig, Field Center Supervisor, and of Mr. Lawrence L. Ruscher, Senior Occupational Analyst. The leader of the team of occupational analysts was Mr. William F. Walquist, now retired, who personally conducted many of the analyses and who was responsible for collating and reporting all the analyses. Having spent many dozens of hours examining and discussing with Mr. Walquist the nearly 800-page collection of analyses and bookkeepers' record forms representing the Labor Department findings, the investigator is keenly appreciative of Mr. Walquist's unflagging industry, acuteness of perceptions, and gratifying concern for precision of facts and inferences. He, too, was called upon for assistance well beyond the call of duty and gave it willingly, even after retirement.

It should also be mentioned that Mr. Berwitz arranged for his staff to conduct preliminary field trial of an early, informal draft of the questionnaire, the responses to which permitted a number of improvements in the final version. In all, the contribution made by the Labor Department and its personnel to fulfilling the objectives of this investigation has been invaluable.

From time to time during the preparation of this report, the investigator has had occasion to solicit background information from the Bureau of Business Education in Albany. Its Chief, Mr. Hobart H. Conover, and Mr. Ronald Wing

have been unfailingly and promptly cooperative. Comparable assistance has been supplied by Dr. Louis A. Cohen, Director of the State Research Coordinating Unit (RCU).

For following up questionnaire mailings to Upstate bookkeepers, Dr. John Wilcox, Director of our sister Institute at Cornell University, kindly made available to us the services of a member of his staff, thereby efficiently and economically executing a necessary part of the procedural requirements for this investigation.

Locally, the investigator has leaned heavily on his own colleagues. Dr. Lee Cohen, Director of the Institute, has supplied all kinds of support, fiscal and professional; and Mrs. Barbara R. Heller, Research Associate with the Institute processed a portion of the data and applied her acute editorial talents to draft versions of each successive portion of the report. The team of part-time, college-undergraduate clerical assistants who carried out the mechanics of questionnaire mailings and of screening and coding questionnaire responses was headed in the spring of 1972 by Mr. James McCarthy and, in the fall of that year, by Miss Cheryl Fuss. Among the members of their teams, Mr. Henry Goldstein distinguished himself by notable energy, verve, varied talents, and dazzling speed of work. Finally, Miss Valentine Michielini, Institute secretary, is that rare treasure into whose lap was dumped an assortment of chores in perfect confidence that they would be carried out with skill and dispatch.

The investigator considers himself fortunate to have had the assistance of the various persons and agencies named.

Leonard J. West

Leonard J. West
Professor and Principal Investigator

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ABSTRACT

To provide a base of information for potential updating of the prevailing high school curricula in Recordkeeping/Bookkeeping, the components of those curricula were examined in relation to the actual job duties of employed bookkeepers--with special focus on entry-level positions and on the effects of computerization on job duties. The questions are: What is in the curriculum that is also on the job? and What is on the job that is not in the curriculum? On the first question, data were gathered by a questionnaire that also solicited details on the educational and work-experience background of employed bookkeepers. On the second question, accounting supervisors in industry were interviewed by professional job analysts who also inquired into the hiring prerequisites of employers. Using an approximate probability sample of employees in New York City private establishments of all types and sizes, questionnaire responses were secured from 597 employees of 337 employers, plus a small phonebook sample of employees in three small Upstate cities. Interview (job-analysis) data--again from a cross-section of types and sizes of employers--covered 237 employees under 63 job titles in 16 establishments.

Questionnaire findings provide explicit information on the varying viability of the components of high school instruction. Job-analysis findings show: computerization to have reduced the need to understand bookkeeping concepts, the relative infrequency of prior school training as a requirement for securing an entry-level position, and the prevalence of on-the-job training of a few days to a few months--whatever the educational background of the employee. Aside from details on these issues, among the higher-order findings and inferences are these: The Recordkeeping curriculum appears to be nonfunctional; The terminology of school instruction is often at variance with job terminology; The job duties and job-responsibility levels of those with no school training in bookkeeping are indistinguishable from those with only high school training; Job responsibility and advancement depend heavily on work experience, secondarily on post-high school education, and not discernibly on high school bookkeeping training; Journal and ledger work is predominantly carried out by experienced, not novice, employees, and high school instruction beyond the trial balance is totally unjustifiable. Recommendations for curricular revision are made in accordance with the findings, explicitly distinguishing between instruction for small-firm and large-firm employment (i.e., manual vs. computerized duties).

SURVEY OF ENTRY-LEVEL BOOKKEEPING ACTIVITIES IN RELATION TO THE HIGH SCHOOL BOOKKEEPING CURRICULUM

The primary objective of occupational education in the secondary schools is preparation for immediate employment. It is self-evident, then, that occupational curricula should match entry-level job requirements as closely as possible. The present inquiry was intended to provide a basis for potential modification of the high school curriculum (more exactly, courses of study) in recordkeeping/bookkeeping/accounting by examining the extent of its agreement with the job activities of employed entry-level bookkeepers.[1] The major questions are: What curricular components are in good accord with job requirements? and What job activities associated with computerized and other automated systems of processing financial data are not in the conventional high school bookkeeping curriculum? Information on the first question was sought by questionnaire and, on the second, by interview.

The earlier history of this inquiry is well represented by both professional and public anticipation of substantial effects of technological developments (principally computerization and other modes of automated data processing) on work activities and job requirements. As early as 1961, the sociologist Ida Hoos, in her Automation in the Office, treated the probable effects of technology on office occupations; and Diebold's popular journal article, "When Will Your Husband Be Obsolete?" (1963), is representative of the drawing of public attention to the effects of technological developments on occupations. Further, it was generally recognized--for example, by Rosenberg in his Automation, Manpower, and Education (1966)--that restructuring of job requirements mandates reexamination and updating of job training.

In particular, bookkeeping occupations were early identified as ones non-trivially affected by the newer automated modes of data processing and, for that reason, suspected of being no longer well matched to or well served by the conventional high school bookkeeping curriculum. That curriculum, as the leading high school bookkeeping texts demonstrate, is predicated on manual

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[1] An additional thesis or philosophy is that education should be, in part, preparation for a career and that high school bookkeeping instruction provides an early step in a career ladder. The present investigation, via its data on the employment and educational history of employees, also furnishes information on the validity of the philosophy.

bookkeeping systems with a history measurable in scores of years. Occasional mention is made of machine methods of data processing, chiefly to demonstrate the universality of fundamental accounting principles. In any event, the suspicion of an out-of-phase curriculum has led in recent years to a number of inquiries into the work of employed bookkeepers and accounting clerks. The findings of those studies are in general agreement in calling into question the relevance of the conventional high school bookkeeping curriculum to present employment requirements and to career advancement. Some of the details of these earlier studies provide explanatory background for the present investigation.

Earlier Research on Bookkeeping Activities and Employment

The pertinent earlier research deals, on the one hand, with curricular relevance and, on the other, with census data on bookkeeping employment.

Five studies completed during the 1967-1970 period provide a sufficient characterization of the information available on the issue of curricular relevance up to the present investigation. Consideration of their scope, purposes, methodology, and findings identifies some of the major areas of information needed to provide a more adequate basis for curricular revision than is supplied by these earlier studies: information to which the present inquiry is addressed.

Luxner, in her inquiry into the early employment history of all 107 vocational bookkeeping graduates of eight Pittsburgh high schools in 1969 (1970), found that of the 89 graduates who were available for employment only 6 persons (6.7%) were able to secure entry-level employment in bookkeeping positions. Analysis of actual job activities led Luxner to conclude that high school teaching of "the method of making complicated entries, such as closing or adjusting entries, and the manual completion of corporation and partnership practice sets is indefensible" (pp. 145-146). In addition, "The study of two years of manual bookkeeping in high school, in and of itself, meets neither job requirements for accounting clerks nor for accountants" (p. 146). Luxner also mentions "the reluctance of business to hire the youthful high school graduate for any responsible position" and recommends that "preparation for an accounting career should be deferred until the post-graduate level" (p. 146).

Similarly, Spanswick, in another small-scale study (1967), found that work experience, rather than their bookkeeping courses, prepared experienced work-

ers to handle the bookkeeping activities most frequently performed in their work.

Lanham, Herschelmann, Weber, and Cook interviewed office employees (mainly between the ages of 16 and 24 with less than a baccalaureate degree) in several major cities (1970). They concluded from data supplied by 251 holders of bookkeeping positions that "the functional classification of accounting and computing might well have been relabeled numerical data handling . . . . The number of [bookkeeping tasks engaged in] requiring application of 'principles of accounting' as taught in schools or requiring 'double entry bookkeeping' as a system of financial transaction analysis was minimal" (p. 27).

A number of procedural features of the Lanham study introduce limits to the applicability of its findings to curriculum revision that the present investigation sought to remedy. In the Lanham study interviewees appear to have been drawn from types of firms (stratified into seven Standard Industrial Classifications--SICs) in proportion to the population distribution by type. However, the report does not give the number and distribution of employers in the sample or describe their method of selection. Also, for breadth of coverage, interviewers were instructed to select no more than 7 cases from any one company, no more than 2 persons in any one job classification in any one firm, and no more than the 6 major activities of each employee. Neither the sampling of firms (within SIC strata) nor of employees within firms seems to have been at random; the restrictions on sampling of employees within firms may have narrowed the range of activities found under a given job title; the frequency of occurrence of various tasks is not reported; and the limit of six major activities for each employee probably sacrificed identification of additional tasks that should be considered for inclusion in school curricula. While the major conclusion of the Lanham study quoted earlier would surely still apply had random sampling been employed throughout, the relatively narrow set of bookkeeping activities observed does not permit one-to-one matching with, or item-by-item assessment of, the components of the high school bookkeeping curriculum.

Perkins, Byrd, and Roley, in their questionnaire survey of a carefully drawn sample of all office employees in the State of Washington (1968), reported the percentages of "Bkkpg/Acctg Workers Performing Financial and Recordkeeping Tasks" who engaged in each of 90 activities ranging from "Sign checks" (20%) to "Keep books and/or ledgers for any purpose" (75%). The

latter activity is the heart of bookkeeping and is one of a number of instances of task phrasing too general to permit explicit association with a particular curricular component: what books? what ledgers? just what activities are subsumed under "Keep"? For another thing, the State of Washington does not represent the concentrations of office workers in large businesses in metropolitan areas. The entire State contains only 11 employers of more than 300 persons; whereas in New York City alone (according to the complete employer records of the New York State Department of Commerce) there were, in April 1971, 346 employers of 500-999 persons and another 253 employers of more than 1,000 persons. Thus the study by Perkins and his colleagues does not reveal the specialization of function suspected to characterize large employers; its findings are not a demonstrably pertinent guide for curriculum revision applicable to the concentrations of office work in metropolitan areas. (See, below, census data on bookkeeping employment.)

Finally, Fairbank inquired by questionnaire into the uses of bookkeeping skills and knowledges of a sample of high school graduates in New York State who had completed the high school bookkeeping curriculum (1967). The inquiry was made four to five years after graduation; the report is based on a 35.5 percent response rate and is silent on nonrespondents. Thus, its purported findings have undeterminable, but probably low, reliability--in view of the characteristic tendency (in questionnaires of the kind and to the audience of Fairbank's investigation) for nonrespondents to differ in material ways from respondents. In the present instance, nonrespondents would tend to be the nonusers of bookkeeping skills--so that the Fairbank data almost certainly substantially overrepresent the use of bookkeeping knowledges and skills among a population defined as high school bookkeeping majors four to five years after graduation.

Summary of Curricular Studies. The reliable evidence from these earlier studies is uniform in calling into question the pertinence of the traditional high school bookkeeping curriculum to beginning bookkeeping employment. However, in some of the earlier instances the task descriptions are too gross to permit unambiguous association with a curricular component. In others, the language of the task descriptions does not permit one-to-one matching with curricular components. There is also some question about the breadth of job title coverage. In all, the earlier studies do not provide sufficient detail for identifying the viable components of the present curricu-

lum, the ones worth retaining. Desirable substitutions in or additions to the curriculum are also not easy to locate in these earlier studies. Moreover, the extent to which obtaining an entry-level bookkeeping position and later advancing to a more responsible position depends on formal school training is an important question to which none of the earlier studies was explicitly addressed.

Questionnaire studies (e.g., Perkins, et al.) that ask employees to indicate which listed activities they engage in cannot identify job activities not on the list. On the other hand, direct observation and interview of employees (e.g., Lanham, et al.) has not to date provided a basis for full assessment of curricular components. Given an existing curriculum and a directive to supply a sufficient and unambiguous basis for modification of it, the present investigation employed both questionnaire and interview techniques: the one, identifying present curricular components that are not viable; the other, identifying current job activities (principally relating to computerization of financial recordkeeping) that are not in the curriculum.[2] The first tactic plays back the curriculum to employees; the second plays back job activities to curriculum makers. Taken together, the information from both sources can provide a more complete basis for curriculum revision than has been available up to now.

Census Data on Bookkeeping Employment. The earlier discussion of the Perkins study points to the relationship between size of city and the distribution of employers according to number of employees and, as well, the suspected differences in extent of specialization of job duties among small versus large employers. Those phenomena have self-evident bearing on the confining of the present investigation (as instructed by the funding agency) largely to New York City employees; and data on bookkeeping employment demonstrate that such

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[2] The curriculum in data processing that is offered in some of the high schools seems to presuppose a clear demarcation between bookkeeping and data processing personnel--in that the DP curriculum does not deal with the concepts that underlie financial recordkeeping (journalizing, posting, etc.). That demarcation appears to be fictitious--applicable, if at all, only to some of the very largest employers. Instead, our own survey data show overwhelmingly that, when ADP is in effect, most bookkeepers are partly involved in it; likewise, some data processing personnel require conceptual knowledge of bookkeeping while others do not. There is no clear line between the job requirements of bookkeepers and those of data processors who handle financial recordkeeping information.

employment is heavily a big-city, big-firm phenomenon.

Cook and Lanham, in their study of Detroit high school graduates (plus dropouts) who were available for employment (1966), found that small companies are not a major source of entry jobs for office workers--at least not in areas containing many large employers. In corroboration of that finding (and as a preview of present findings), only one-fourth (24.2%) of employers of 0-3 persons and only one-third (34.2%) of employers of 4-9 persons were found to employ any bookkeeper.[3] On a larger scale, data from the 1970 decennial census are provided in two government reports (U.S. Department of Commerce, 1971; Gellner, 1971). These summaries of census data show that the 20 largest SMSAs (Standard Metropolitan Statistical Areas) contain 31.9 percent of the nation's population, but 41.0 percent of the nation's clerical workers. In more detail, the percentages of all employed persons who were clerical workers in 1970 are: in the nation, 17.4%; in all nonmetropolitan areas, 12.8%; in all metropolitan areas, 19.9%; in the 20 largest SMSAs, 21.4% (23.4% in the central cities of these SMSAs and 19.9% in the suburban rings). One-third (33.0%) of all the clerical workers in the 20 largest central cities are employed in New York City, which employs 6.3% of the nation's clerical workers although it contains but 3.9% of the nation's population.

Decennial census data supplied by the Division of Occupational Education Planning of the New York State Department of Education[4] reveal that New York City contained in 1970: 43.3 percent of the State's population, 54.0 percent of the State's clerical workers, and 52.3 percent of the State's employed bookkeepers. Taken together, the State's "big six" central cities (Albany, Buffalo, New York, Rochester, Syracuse, Yonkers) contained 50.3 percent of the State's population, 61.0 percent of the State's clerical workers, and 58.4 percent of the State's employed bookkeepers. The SMSAs of which these big-six cities are the hub (central cities plus suburban rings) contain 84.3 percent of the State's population (U.S. Department of Commerce, 1971) and, by inference, a comparably dominating proportion of the State's clerical

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[3] Among a sample of 727 employers, all who employed 0-9 persons who did not respond to our questionnaire (but to whom our mail was delivered and for whom a phonebook listing existed) were telephoned to determine whether any person was employed whose job duties included bookkeeping.

[4] Personal communication, January 26, 1973.

workers and, within that occupational group, bookkeepers. Finally, in New York State as a whole, 10.7 percent of all clerical workers are classified as bookkeepers. (The largest specified category of clerical workers is "stenographers, typists, secretaries," accounting for more than one-fourth of the nation's clerical workers).

The foregoing data make apparent that clerical work is a substantially urban phenomenon. The New York City data of the present study may be assumed to apply beyond the City to metropolitan-area employment in general, which is to say, to the majority of the nation's employed bookkeepers. Also, to the extent that the content of the courses of study represented in the present questionnaire is reasonably characteristic of national courses of study (as inferred from analysis of the content of leading textbooks), the findings of the present investigation have national applicability. Present data are based on firms of all sizes, including a small sample of employers in three upstate areas.

MAJOR PURPOSES

The general purpose of the present inquiry was to provide an unambiguous basis for potential modification of the high school courses of study in recordkeeping/bookkeeping/accounting to bring them into close accord with the actual job activities of entry-level bookkeepers and accounting clerks. (An entry-level position is one that employers in fact offer to inexperienced or untrained or nominally experienced or nominally trained persons.) Based on data almost entirely confined to New York City employees, the major questions are:

1. What components of the standard high school recordkeeping/bookkeeping/accounting curriculum represent activities engaged in by entry-level employees?
2. What work activities of entry-level employees (particularly those attendant on computerization of financial data processing) are not included in the standard high school curriculum?

As will be explained under "Procedures," information on the first question was obtained by mailed questionnaire completed by employed bookkeepers and, on the second question, by interview of accounting supervisors and, sometimes, of their bookkeepers. In view of the common supposition that the work activities of beginners might vary with differences in type and size of firm--extreme specialization of function being suspected in the very large firms

and breadth of function being expected among very small firms--a third question is:

3. What differences in work activities, if any, are associated with differences in type and size of firm?

Closely related to the foregoing major questions are others arising from the thought of those responsible for bookkeeping instruction that the trained person has an advantage over the untrained one in finding a bookkeeping job and, second, that although the high school graduate with school training in bookkeeping is not expected to be offered at the outset a position involving higher-level activities (e.g., preparation of financial statements), formal training in bookkeeping is necessary or helpful for advancement in the field. On those issues our questionnaire for employees solicited educational and work history, as well as respondents' judgments of the pertinence of school training to employment and advancement. Also, for reasons that will be given later, respondents were found to range over a hierarchy of job responsibility from the lowliest clerks to company officers with job titles such as chief accountant, treasurer, and the like. Accordingly, the present investigation also furnished information on the question:

4. What is the extent of dependence of employment and advancement in bookkeeping positions on formal school training in bookkeeping?

Another common position is that bookkeeping has "general education" values. That issue is, in part, a philosophical--and therefore not a researchable--one. Argument over what is "good for people to know" leads nowhere. If, on the other hand, the question is restricted to "What components of bookkeeping instruction are in fact used by large numbers of adults in general?" (e.g., bank reconciliation: bringing one's own checkbook records and the bank's statement into agreement), the issue becomes a manageable one. For the presumed modest number of items so identified, one could then consider whether an entire year of instruction is needed for such matters or whether, instead, they could be incorporated into some school offering mandated for or made available to all students. After all, if some component of instruction has general education value, it should be available to all and not be restricted to the "business" majors who enroll in bookkeeping courses.

Finally, a few words on computerization of financial data processing are

in order. The questionnaire contains a section on data processing, almost entirely confined to the essentially clerical tasks of coding input data, verifying computer output (printouts), and correcting discrepancies. Data processing activities unlikely to involve bookkeepers are not listed. Discussion with Labor Department personnel during the planning of their (interview) part of this inquiry made apparent that computerization goes beyond mere clerical tasks and involves intermediate records unlike those of manual bookkeeping systems. Accordingly, their interviews were deliberately planned to include information on the question:

5. What job activities under computerization of financial data processing require cognitive knowledge: understanding of bookkeeping and accounting concepts and principles (e.g., double-entry)?

Other more detailed questions (e.g., extent of use of various business machines) were also incorporated into the questionnaire. These and other lower-order questions are not listed here, but are made explicit in the later section of this report containing the findings or results of this inquiry.

The five major questions listed above are judged to capture the kinds of information that can provide a sufficiently detailed and unambiguous basis for improving the match between high school training in bookkeeping and employment requirements. Information for curricular examination is supplied. It is not the intent or purpose of the present inquiry to suggest or identify or construct a modified curriculum, but only to provide a base of information for that purpose.

PROCEDURES

An overview of procedures may help to put into focus the more detailed exposition that follows. First, some data were collected by questionnaire; other data by interview. Second, questionnaire data were almost entirely from New York City employees, but a small portion represents employment in three small upstate cities. Third, access to employees for questionnaire purposes was through their employers, and our initial sample of employers was not confined to those known to employ at least one bookkeeper. There was, therefore, a reduction of the initial employer sample to those known to be "eligible" in the light of this survey's purposes.

Procedural details are given first for the questionnaire inquiry conducted by the investigator and his colleagues (in New York City and then upstate); next for the interviews conducted by job analysts of the New York Occupational

Analysis Field Center of the New York State Department of Labor.

Questionnaire Procedures

The applicable procedures, described in turn, concern: (1) design of the questionnaire, (2) sampling of employers and of employees within employing units, (3) mechanics of approaching and following up members of the sample and of resolving discrepancies and contradictions in responses, and (4) development of a job-level or job-responsibility code.

Questionnaire Design

A copy of the 4-page questionnaire is appended (pp. 231-234). Its three major sections cover biographical and other background information, details of present work activities, and additional work activities and task-frequency information.

The first section of the questionnaire (first page and left side of second page) consists of 36 questions[5] that solicit identifying and background information about respondents: educational and employment history (Questions 3-23), including respondents' opinions about the need for formal bookkeeping training (Questions 13, 14, 21c and d, 23c), machine use and computational activities in the respondent's present job, involvement in electronic data processing, etc. (Questions 24-32).[6] Question 33 (number of money columns in journals) was included (for its curricular implications) at the express request of the Bureau of Business Education of the New York State Department of Education. Questions 34 and 35 provide summary information about journal and ledger work covered in more detail later in the questionnaire, and Question 36 solicits details of subsidiary-ledger work not elsewhere reported.

The main body of the questionnaire (beginning on the right side of the second page) lists the "Details of Present Job Activities,"[7] numbered seri-

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[5] Formulated by the principal investigator, who was also responsible for the graphic design of the entire questionnaire.

[6] The responses to Question 30 (left side of second page) were not processed because internal evidence and telephone inquiry of respondents revealed the question to have been ambiguous, its intent not clear to respondents.

[7] An initial draft of the curriculum-derived job activities was developed, refined, and organized into subsections by the two bookkeeping/accounting consultants mentioned in the Acknowledgments (Messrs. Elliott and Toder).

ally 1-132[8] and organized into lettered subsections corresponding to areas of financial recordkeeping. The LEARN columns accompanying the job activities list were provided by the principal investigator mainly to supply an explicit basis for distinguishing what must be from what need not be incorporated into formal school training. One might ask, polemically: "Why teach it in school if it is typically learned on the job?" or, rhetorically: "What should be inferred if persons who perform an activity covered in earlier school training do not recall its inclusion in their schooling or do not feel that the activity was 'really' learned in school?"--as inferred from a check in the Job but not in the Sch column. Interpretation of the LEARN-column responses is not so clear-cut as the foregoing questions might suggest; for example, an item typically in the curriculum might not have been covered in a particular school or bookkeeping class, or it might have been forgotten by a respondent whose school training long antedates his questionnaire responses--but the intent of the LEARN columns is evident in the two questions raised above.

Details of Present Job Activities. The major bases for drafting job-activities items associated with the curriculum (Section L excepted) were New York State's "Bookkeeping and Accounting I and II Syllabus" (1970) and the the New York City syllabus in "Recordkeeping for High Schools" (1970). Two tactics were employed to estimate the applicability of these local syllabi to bookkeeping instruction nationally: (1) To determine the extent to which questionnaire content is generally present in national instruction, the questionnaire items were tallied against the contents of eight nationally used high school recordkeeping/bookkeeping textbooks of three major publishers, and (2) To determine what national instruction is not covered by the questionnaire, the contents of one first-year bookkeeping text were matched against the questionnaire items.[9] In short: (1) Is what is in the question-

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[8]There are actually 131 items. Item 94 (Do you prepare a post-closing trial balance?) was inadvertently omitted in Varityping the master copy, and its omission was not caught by the principal investigator in proofreading the master before duplication.

[9]Textbook examination was done by Mr. Aaron Toder. The books examined were the latest ones applicable to the high school attendance of the youngest questionnaire respondents and consisted of: three recordkeeping texts of two publishers, one first-year bookkeeping text of each of three publishers, and one advanced bookkeeping text of each of two publishers. Among them, one first-year text was tallied against the questionnaire items.

naire also in the textbooks? and (2) What is in the textbooks that is not in the questionnaire? The rationale underlying both aspects of questionnaire/textbook comparison is that, with due respect to local variations and locally prepared materials, it is the textbook that largely defines the curriculum.

In that connection, both textbook sales[10] and enrollment figures show that one year of bookkeeping instruction predominates in the public secondary schools, but that the New York City schools have enrolled much larger proportions in second-year courses. Specifically, across the nation, 90 percent (and in New York State exclusive of New York City, 87.5%[11]) of enrollment is in 1-year courses (Wright, 1965; Gertler and Barker, 1972); whereas 75 percent of New York City enrollment has been for 1-year programs.[12] In short, the national ratio of 1- to 2-year enrollment has been 9 to 1; the City ratio, 3 to 1. However, during recent years, characterized by gross changes in the composition of the City's student body, the former 1-year curriculum has been extended over a somewhat longer period. Second-year instruction does include deeper treatment of selected topics, but on a more modest scale than had prevailed in second-year instruction in earlier years.

The detailed results of examination of eight textbooks for inclusion of 121 questionnaire items (Section L excepted) are shown in Table 83 (page 206). All but 12 items were covered in at least one of the eight books,[13] and more than half the items were covered in 4-8 of the books, as follows:

No. of books	0	1	2	3	4	5	6	7	8	
No. of items	12	12	21	13	16	16	13	15	3	(Total = 121)

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[10] In personal communications (February 1973) to Mr. Norman Elliott from the two largest publishers of high school bookkeeping texts, the ratio of sales of 1-year to 2-year texts was estimated at 10:1 and 7:1. Presumably, at least some of second-year sales is to proprietary business schools and junior colleges.

[11] Based on data supplied by the New York State Department of Education.

[12] Data supplied by Mr. Elliott, March 1973.

[13] Questionnaire items not in any of the eight texts are Nos. 28, 36, 47, 62-64, 96, 98, 99, 126, 127, 131. The consultants included them in the questionnaire either because the activity is known to be reasonably prevalent in bookkeeping practice or because it is related to subcontracting, branch accounting, or institutional recordkeeping. No. 47 perhaps belongs in Section L, as a data processing activity.

In the reverse direction (What is in one of the leading first-year textbooks that is not in the questionnaire?), tallying of the contents of the Freeman, Hanna and Kahn textbook against the 131 questionnaire items revealed the tendency of textbooks to be encyclopedic, to leave few stones unturned. Thus the textbook, but not the questionnaire, includes the very rare Journalless and Ledgerless accounting and such essentially clerical and nonconceptual matters as visual files, edge notched cards, strip accounting, and batch posting. The textbook also deals specifically with closing entries for each of various types of accounts, whereas that type of activity is represented by only one questionnaire item (No. 114), referring to income and expense accounts. The foregoing items (and the textbook treatment of data processing) excepted, everything in the textbook is represented in the questionnaire.

Taken together, the results of 8-book and 1-book examination demonstrate the applicability of the questionnaire's job activity list to national instruction in bookkeeping. Tangential corroboration of that inference was supplied by examination of the questionnaires used in two earlier studies (Fairbank, 1967; Perkins, et al, 1968), which revealed no job activities with conceptual content omitted from the present questionnaire. Finally, some syllabus items that are wholly or largely manipulative (e.g., coin wrapping, sorting financial papers by date or number, and other such trivia) were also omitted.

Concerning Section L of the questionnaire (on data processing), the New York State Department of Education syllabus entitled "ADP [Automated Data Processing] Supplement to Bookkeeping and Accounting I and II (1971) was found to be inapplicable to the purposes of the present investigation. High school data processing, as given in that Supplement, is largely conceptual and general (e.g., How to read a punch card, How to read a flow chart); it does not prescribe instruction or "hands on" practice in carrying out data processing activities. Questionnaire item No. 125 excepted, nothing in the Supplement could be worded as an explicit job activity. Activities 116-124 record, instead, the consultants' judgments of clerical data processing activities likely to involve bookkeeping personnel.

Another point concerns the phrasing of job activities. High school instruction is overwhelmingly oriented around "businesses" that have "customers." The wording of Item 26 illustrates the capturing of institutional and professional employment as well:

> Do you record or post invoices, bills, or credit memos to accounts of customers, subscribers, patients, clients, or grantors?

There was less success in capturing the terminology associated with automated processing of financial data. For example, one "posts" to a ledger and makes "entries" in journals. Yet, many respondents who checked Yes to items that describe posting and journalizing checked No to the general questions on ledger work (Nos. 34 and 35, left side of second page) and did not specify the number of money columns in the pertinent journals listed in Question 33 (left side of second page). The reverse inconsistency was also quite frequent: Yes to the general questions, unaccompanied by Yes to the more particular items. Telephone inquiry of such respondents revealed that they were involved in computerized systems that use locally designed intermediate forms that might or might not correspond to a ledger account or journal page and might or might not require conceptual understanding of posting and journalizing. In any event, the mode of correcting these on-the-surface inconsistencies and reliably interpreting the respondents' job activities is described later (p. 17).

Sampling of Employers and Employees

The procedures and outcomes of sampling of employers and employees in New York City and in three small upstate cities are given in detail in a Technical Appendix (pp. 209-221) and are briefly summarized here.

A probability sample[15] was drawn from the population (as of spring 1971) of all 197,565 New York City nongovernmental employers and, among them, their bookkeeping employees. In the three small upstate cities, samples were drawn from the yellow pages of the local phone books. Completed questionnaires were received from 59 upstate bookkeepers employed by 56 firms and, in New York City, from 597 employees of 337 different employers (see Table 90, p. 218). Cooperation was received from 46.1 percent of the sample employers known to employ at least one bookkeeper and from 59.3 percent of the sample employees of the cooperating employers--in New York City.

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[15] A probability sample is one in which every element in the population has a known probability of being selected. In the present instance, the sample frequencies for "type" (Standard Industrial Classification) and "size" (total number of employees) were approximately in proportion to the type and size distributions of the population of all 197,565 New York City private employers. The sampling plan was drawn up by our statistical sampling consultant, Professor Martin Frankel, then of Baruch College of The City University of New York and now at the University of Chicago, based upon population information supplied by Mr. Peter A. Ansell, Director of the Bureau of Business Research of the New York State Department of Commerce.

Generalizability of Sample Data. The generalizability of the sample findings to the population of all bookkkeeping employment (particularly entry-level employment) rests on the question of whether the job activities of non-respondents to our questionnaire differ from those of respondents. The information on that question is given in the Technical Appendix (pp. 209-221), showing the various ascertained reasons for nonresponse, none of which had to do with distinctiveness of job activities. Accordingly, it is felt that the sample findings adequately characterize bookkeeping employment and provide a sound basis for curricular modification.

Contacting and Following Up Employers and Employees in New York City

Because many of the details of contacting and following up employers and employees are given in the Technical Appendix (mainly pp. 210-216), the applicable procedures are summarized here, and some additional information is given.

Smaller firms (Sizes A and B, 0-3 and 4-9 employees) were sent by mail an explanatory cover letter (p. 228), a copy of the questionnaire, a separate explanatory note to the bookkeeping employee (p. 230), and a franked business reply envelope. The assumption was that the small firm employed at most one bookkeeper. The employer was asked to give that person our questionnaire and its accompaniments. The larger firms (Sizes C-F, 10-1,000+ employees) were sent a different cover letter (p. 227), together with an illustrative list of typical entry-level job titles as given by the Department of Labor (p. 229). As stated in the large-firm cover letter, employers were then phoned to further solicit their cooperation and to draw a random sample of their entry-level bookkeepers and accounting clerks (details given in the Technical Appendix, pp. 213-214). Upon completion of employee selection from cooperating employers, we mailed to the employer for distribution to selected employees the required number of questionnaires, explanatory notes for the employees, and return envelopes. As given in the employer cover letters (to both small and large firms), employees were offered a $3 emolument for completing and returning the questionnaire.

The foregoing procedures were applied twice: in spring and fall 1972 mailings to different samples of employers drawn from the same population of all 197,565 New York City nongovernmental employers. In the spring, employer mailings were marked for the attention of "President or Personnel

Director." Among large employers, endless telephoning was required in order to reach the company officer who could take responsibility for authorizing access to employees.[16] Very often, our original mail did not reach that person; another mailing had to be addressed to him by name. Sometimes, a copy of the questionnaire was specifically requested, so that employers could assure themselves that no confidential information was being sought. Fall mailing was preceded by telephoning with the question: "May I speak to (or what is the name and title of) the person in charge of your bookkeeping and accounting personnel (so that we may send a letter directly to that person)?" Fall mailings were then addressed directly to the appropriate company officer by name and title--greatly reducing, but by no means entirely removing, the repeated telephoning that followed the spring mailing.

Immediately upon receipt of completed questionnaires, they were screened for completeness and internal consistency. Omissions and discrepancies were cleared up in a telephone call directly to the respondent, who was then sent a check for $3 together with a little note of thanks.

Both employers and employees were followed up by phone. Employers who promised cooperation were followed up--if necessary, to the point of no return--on behalf of their getting in hand a list of all pertinent employees from which a sample could be drawn; (in the giant firms, such a list could have hundreds of names pulled together from various departments and geographical locations--at no small cost of company time). Employers to whom materials for employees were sent were also followed up if, within a week or two after mailing, no responses were received. In the same fashion, individual employees not heard from within a week or two after receipt of our questionnaire were telephoned at work to urge their cooperation. In all, it is estimated that perhaps about half of our questionnaire returns were derived from telephone follow up, rather than from initial contacts. A telephone campaign accompanying efforts by mail would seem to be a necessity in investigations like this one--that is to say, ones in which cooperation is more a courtesy than an act leading to clear and immediate gain by participants.

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[16] Much of the telephoning was done by a pretrained group of college students who became very skillful at dealing with secretaries who viewed their prime mission as protecting their bosses from strange callers. Among the more successful ploys was: "I'm in the same boat you are. My boss [the principal investigator] won't like it if I can't make contact with Mr. ___."

Resolving Discrepancies in Questionnaire Responses. Omissions and inconsistencies discovered upon screening returned questionnaires were repaired by telephoning the respondent. One common class of inconsistencies, easily cleared up, were estimates of work time for various activities that had totalled a work week characteristic of the sweatshop era. For example, a respondent might report 10 hours a week at a typewriter and also 90 percent of a typical work week spent in performing calculations (Question 29, left side of p. 2). "It only seems that way" was the typical and revealing comment of such respondents before correcting the calculation percentage.

More troublesome were the inconsistencies mentioned in the upper part of page 14 of this report. In all such instances the respondent was asked to describe as best as possible over the phone the nature of the locally developed, intermediate record forms involved in computerized systems and whether a knowledge of double-entry principles was required for making entries on those forms.[17] Many such respondents, by the way, had earlier held responsible positions under manual accounting systems but, upon computerization, no longer required knowledge of double-entry principles. Thus, many understood the later computer processing of intermediate-form records in double-entry terms (because of their earlier experience in manual accounting systems), but explained that there was no real "need to know." In any event, as required, the Yes responses to posting and journalizing activities in the job-activities list were brought into agreement with the responses to Questions 33-36 (left side of p. 2 of questionnaire)--and vice versa. As applicable, instances of Yes to a given job activity had to be changed to No (with the concurrence of the respondent).

Development of a Job Code

From small employers (fewer than 10 employees) it was anticipated that the single bookkeeping employee might well not be an entry-level person. However, despite the cover letter and job-title list pointing to entry-level persons sent to larger firms and despite the follow-up phone conversation with a com-

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[17] Phone description of record forms, without the record form in our hands, was not considered a sufficiently reliable basis for formal characterization of the extent of need for conceptual bookkeeping knowledge under computerized accounting systems. Accordingly, findings on that issue are confined to the outcomes of the Labor Department job analyses of interview data, accompanied by copies of the intermediate record forms used in computerized systems.

pany officer for employee-sampling purposes, substantial numbers of returns from employers of more than nine persons were from nonentry-level employees. Telephone inquiry of the employer or employee, soliciting an explanation and asking whether there might not be a lower-level person to whom we might send a questionnaire, elicited such comments as: Well, I looked at your questionnaire, and none of our beginners do such advanced things or Our junior people couldn't check more than one or two things on it or We just don't have anybody who hasn't been around for several years or I'm the junior person around here; and so on. What seems to have happened (perhaps the offer of a $3 emolument had something to do with it) was that some company contact persons took "entry-level" to mean their junior people, regardless of their status in relation to the illustrative job-title list that accompanied the cover letter.

The foregoing outcome provided an unexpected dividend, a bit of serendipity. Despite our directive to examine entry-level positions, returns from persons across the hierarchy of job responsibility also permitted examining the contribution of formal school training in bookkeeping to job advancement. To do so, it was necessary to develop a code representing successive levels of job responsibility inferred from the job activities reported by respondents.

The task of developing a job-level code was undertaken by Messrs. Elliott and Toder, two of our bookkeeping consultants, and an early draft instantly made apparent the difference between "bookkeeping" defined as what is taught in bookkeeping courses and "bookkeeping" defined as what persons employed to process financial data in fact do. The latter definition is manifestly the pertinent one. Under the former definition, the majority of respondents at entry levels would have had to be characterized as clerks, not bookkeepers. Accordingly, the job-level or job-responsibility code was developed in keeping with the pertinent definition. Each of its levels is defined by the criteria displayed in Table 1; those criteria are tied to Yes checks for the questionnaire items given in the footnote. Grossly defined, the levels are;

> (1) Clerk or machine operator, (2) Accounting clerk, (3) Assistant bookkeeper, (4) Bookkeeper, (5) Junior accountant, (6) Accountant, and "Mixed" positions.

The "mixed" positions cover activities in addition to bookkeeping: e.g., the owner of a small business who keeps his own books, dental nurse, secretary/bookkeeper, Gal Friday, office manager/bookkeeper, and the like.

As shown in Table 1, there are 11 different ways (Levels 3a-3k) to be an "Assistant Bookkeeper," 4 ways to be a "Bookkeeper" (Levels 4a-4d), and either of two ways to be a "Clerk" (Level 1) or "Accounting Clerk" (Level 2). Reading of the table is illustrated following the table, on page 20.

Table 1

Criteria for Job-Level Coding[a]

Level	General Journal	Special Journals			General Ledger		Subsidiary Ledgers		Statements		Adjustments		Other
		1	2	3+	1-2	3+	1	2+	TB	Other	1-2	3	
1		x		OR			x						
2	x OR	x		and			x						
3a		x			x			x					
3b			x								x		
3c	x		x				x						
3d				x					x				
3e	x			x									
3f				x									Payroll
3g				x				x					
3h	x												Payroll
3i					x								Payroll
3j				x								x	
3k				x		x							
4a	x			x		x		x	x				
4b	x			x		x						x	
4c	x					x			x			x	
4d									x	x		x	
5	At least 2 years post high school education, including at least two post high school accounting courses, plus Yes checks in Statements section												

[a] Genl. Journal items: 33(1), 65, 97, 98, 99, 100, 101, 104, 111, 113, 114
Spec. Journal items: 33(2-6), 9, 10, 11, 15, 16, 17, 18, 19, 25, 42, 44, 45, 48, 49, 51, 52, 54, 56, 69, 77, 78, 82, 102
Genl. Ledger items: 34, 70, 79, 100, 105, 112
Subsid. Ledger items: 35, 26, 27, 28, 57, 58, 130, 131
Statements: 88, 89, 90, 91
Adjustments: 106, 107, 108, 109, 110, 115

To illustrate the reading of Table 1: One way to qualify as an Assistant Bookkeeper (Row 3a) is to check Yes to one of the Special Journal questionnaire items (see table footnote), to 1 or 2 General Ledger items, and to at least 2 Subsidiary Ledger items. Another way (Row 3e) is to make entries in the General Journal and in at least 3 Special Journals. One way to qualify as a Bookkeeper (Row 4c) involves the General Journal, at least 3 General Ledger accounts, the preparation of a trial balance (TB), and at least 3 adjusting entries. An Accounting Clerk (Row 2) must make General Journal entries or be involved with 1 Special Journal plus 1 Subsidiary Ledger. The particular questionnaire items that go with the column headings of Table 1 are given in the table footnote.

Those holding "mixed" positions (Level 7, not shown in Table 1) were additionally coded on the bases shown in Table 1. Level-6 criteria are also not shown in Table 1. Coding at levels 5 and 6 was on a less piecemeal basis than the lower levels: from involvement with financial statements considered side by side with post high school education and accounting courses, as well as job title (Questions 6-10, p. 1 of questionnaire). The primary job coding basis was job activities, regardless of self-assigned job title (Question 10). For example, a respondent we coded as a Junior Accountant (Level 5) called himself an accounting clerk only because that was the job title assigned by his employer; he in fact supervised a number of "bookkeepers." One peppy and peppery gentleman in his seventies claimed the activities of a senior accountant although he had no formal bookkeeping training and no post high school education whatever. His telephoned explanation was: "When you've been in the accounting field for fifty years, as I have, there's nothing you can't and don't do." He was assigned his earned job level of 5 for junior accountant. In some instances, the responses to Question 133 (last page of questionnaire) helped to discriminate borderline status between one job level and another.

Beyond the immediate purposes of the present investigation, the job-level code is felt to provide a useful preliminary attempt at job analysis of the field of bookkeeping/accounting rather deeper than that available up to now in the Labor Department coding of the Dictionary of Occupational Titles. Indeed, for the analysis of the Labor Department interview data of the present investigation (bearing on the need for conceptual knowledge among computerized accounting personnel), a 3-level code suggested by the investigator was used.

Processing of Upstate Returns

Inclusion of three small upstate cities in this investigation was at the mandate of the New York State Department of Education. It was presumably felt that the small employer characteristic of the small city would go hand in hand with a requirement for employees who could carry responsibility for a variety of bookkeeping activities up through, perhaps, the preparation of financial statements. Small employers are, of course, also represented in the New York City sampling, and generated completed questionnaires from 56 employees in 52 non-public establishments. Upstate, small-city sampling (generating 59 responses from 56 employers) may be thought of as adding to the amount of information on which inferences about small employers could be based.

In any event, phonebook (rather than probability) sampling of upstate employers was agreed upon with the funding agency--with the understanding that follow-up efforts and resolving of discrepancies in returns from upstate respondents would not be undertaken: the gain would not be worth the investment of telephone toll charges between New York City and the three upstate cities (Auburn, Batavia, Elmira). Accordingly, the mailing to small employers (see p. 15) was made to the upstate cities from New York City and followed up by phone from the Cornell campus only to verify receipt of the mail, to encourage employer cooperation, to send another mailing should the earlier one not be at hand, and to send an additional questionnaire or two should the employer be large enough to justify sampling more than one employee. All 190 of the upstate employers were phoned, and 101 of them reported no bookkeeping employees. No further contact with upstate employers or employees was undertaken. Completed questionnaires mailed to New York City were processed as best as possible. Omissions and inconsistencies were not resolved via further inquiry. In consequence--and in contrast to the data from New York City employees--upstate data are judged to be of lower reliability and, for that reason, are separately reported, not added to the New York City data for small employers.

Labor Department Job Analyses

The derivation of questionnaire statements of job activities from curricular sources largely confined to manual bookkeeping systems could not adequately capture the changes in activities of entry-level bookkeepers occa-

sioned by computerization of financial recordkeeping. Accordingly, upon request, the Occupational Analysis-Industrial Services Unit of the New York State Department of Labor agreed to undertake interviewing of a sample of accounting supervisors and, in some instances, of their entry-level bookkeeping employees. The inquiry was conducted by experienced, professional job analysts who used standard Labor Department techniques and vocabulary in conducting and reporting the results of interviews. Also, in particular behalf of this investigation, computerization was especially examined, and record forms were collected and analyzed.

Interviews covered 16 "establishments" (employers) in 10 industries. The employers were selected to cover the range of industrial classifications and firm size (total number of employees), but not by any formal (probability) sampling process. The employers were: a paint manufacturer, a women's dress manufacturer, a hotel of an international hotel chain, a nonprofit publisher, a commercial publisher, a major department store, a retail furniture store, an insurance brokerage, a major wholesaler and a major marine transporter of petroleum products, a national medical insurance carrier, a commercial and a mutual savings bank, a public utility, an aircraft manufacturer, and State government (New York State Labor Department). Of the 16 employers, 12 were located in New York City; the others, upstate or in New Jersey. Firm size ranged from 15 to more than 10,000 employees.

Interviews covered 63 different "jobs" (job titles) embracing 237 "positions" (individuals). Specifically, 52 jobs covering 213 positions were at entry levels; 11 jobs covering 24 positions were nonentry ones. Of the 63 jobs, 38 (60%) involved computerization, embracing 155 (67%) of the positions.

The resulting job descriptions are the raw materials which form the basis for the definitions (job descriptions) that later appear in the Dictionary of Occupational Titles. For present purposes, interviewers also collected samples of work forms used by employees; and they estimated, jointly with accounting supervisors in these firms, the level of conceptual knowledge of bookkeeping required for using the work forms. Three levels of conceptual requirements--used by the Labor Department for classifying each of the 63 jobs--are given, with illustrations, in Table 2. In addition, the principal investigator and the chief Labor Department analyst examined all the job descriptions and accompanying materials, and they also applied the six-level job-responsibility code earlier developed for the questionnaire data.

Table 2

Criteria for Estimating Conceptual Knowledge Requirements for Job Performance In Labor Department Job Analyses

I. Little or no conceptual knowledge required	II. Limited or moderate conceptual knowledge required	III. Substantial conceptual knowledge required
Simple balancing to prove one set of figures against another; preparing a so-called trial balance not involving double-entry records.	Preparing trial balance or cash and security proofs to verify accuracy of records.	Taking trial balance to close books.
Transcribing (copying) debit and credit entries so labeled on business forms. Machine or manual journalizing requiring only copying and computing totals and balances.	Journalizing and/or posting requiring comprehension of double-entry principles.	Requiring full understanding of double entry as related to both balance sheet and P & L. Maintaining general ledger; opening and closing books.
Simple coding for computer input.	Coding requiring judgment of nature or category of transaction (debit? credit? to what account?). Complex journalizing and coding of composite transactions.	
Preparing reversing entries for correction where figures are given as plus or minus.	Preparing reversing entries to record adjustments, accruals, prepayments, suspensions, etc.	
Reconciling simple bank statement.	Reconciling bank statement requiring complex adjustments to company accounts.	
	Maintaining subsidiary ledgers and proving sub-ledgers against general ledger accts.	Relating of sections of accounting system to system as a whole in terms of debits, credits, accounts, flow of data, etc.

(Table 2 continued on the next page.)

Table 2 (continued)

I. Little or no conceptual knowledge required	II. Limited or moderate conceptual knowledge required	III. Substantial conceptual knowledge required
Maintaining running inventory		Recording depreciation requiring understanding of the principle. Maintaining equipment accts.
Preparing simple recapitulations and summaries.	Preparing complex summaries involving debit and credit or sales and purchases.	
		Actions requiring knowledge of fiduciary accounting conceptsrelated to statutes, courtcases, etc.

As may be inferred from the Level-I illustrations in the left-hand column of Table 2, there are instances in which recordkeeping activities that might appear superficially to consist of journalizing, posting, balancing, making reversal entries, and making various summaries were in fact transformed into clerical tasks involving mere copying, transcribing or computing. Also evident are the rather higher standards of definition used by the accounting executives and supervisors than in high school bookkeeping instruction. For example, to employers, reconciling a simple bank statement is a clerical task; whereas in bookkeeping instruction that act is considered to have nontrivial conceptual content intrinsic to bookkeeping.

The chief implication of the conceptual standards of Table 2 in relation to the six-level job-responsibility code applied to questionnaire responses is that the latter code undoubtedly overestimates the conceptual requirements at the lower levels. Neither the wording of questionnaire items nor the telephone follow-up procedures that were employed permitted, especially among personnel in computerized systems, sufficiently accurate discrimination between simple copying and conceptual requirements. In the instances of ambiguity or uncertainty at lower levels, coding erred on the generous side. The standards of Table 2 are probably a more accurate guide to the conceptual requirements of entry-level positions, and the outcomes of their application to the 63 job analyses, further transformed into the same 6-level code applied to questionnaire respondents, are shown in Table 72, pp. 131-134.

RESULTS AND DISCUSSION: I. QUESTIONNAIRE FINDINGS

Presented here are the questionnaire findings based on 597 New York City respondents and on 59 Upstate respondents and, thereafter, the findings from the interviews conducted by the Labor Department occupational analysts. Concerning the Upstate data, in many instances there were too few persons involved to justify reporting the data, or the findings differed little if at all, from the New York City findings. Accordingly, details on Upstate findings are given only when based on sufficient numbers and when there were apparent differences between Upstate and New York City respondents.

Another feature of the organization of this part of the report provides a safeguard against losing sight of the forest for the trees. Detailed curricular findings are mostly those relating to the list of 131 job activities in the questionnaire--these are the trees. However, the substantial amount of background information on respondents (their educational and job history, primarily) provides not only a helpful perspective for considering curricular details, but also (and often) generalizations of more consequence than those that arise from job-activity details. Accordingly, background information is reported first, detailed curricular findings last (pp. 108-126 and 165-172).

Age, Sex, Education, and Amount of Work Experience

Respondents reported their ages as either in the range 16-24 years old or 25+ years. The percentage distributions for age and sex, as reported by respondents, are shown in Table 3. Here and hereafter, NYC stands for New York City respondents.

Table 3

Age and Sex of NYC and Upstate Respondents

(In Percentages)

Sex	Age					
	New York City			Upstate		
	-24	25+	All	-24	25+	All
Male	6.2	21.8	28.0	1.7	20.3	22.0
Female	15.9	56.1	72.0	15.2	62.7	78.0
Total	22.1	77.9	100.0	16.9	83.1	100.0

Note. N = 597 NYC and 59 Upstate respondents.

Table 3 makes apparent that bookkeeping occupations mainly attract females. In contrast to NYC respondents, the Upstate employees consist of fewer young males and more older females. For New York City and then Upstate, the female-to-male ratios are 2.6 to 1 and 3.5 to 1; the older-to-younger ratios are 3.5 to 1 and 4.9 to 1.

Age information was solicited in categories as gross as 18-24 and 25+ in anticipation of the resistance of some females to reporting to-the-year age. However, closer estimates of age are inferable from high school graduation date, assuming 18 to be the characteristic age at high school graduation. Distributions for high school graduation year and estimated age are given in Table 4.

Table 4

High School Graduation Year and Assumed Median Age of Respondents

Graduation Year	Median Age	New York City			Upstate		
		N	%	Cum. % (Read Up)	N	%	Cum. % (Read Up)
Pre 1930	60+	31[a]	5.5	100.0	5	9.2	100.0
1930-39	55	113	20.0	94.5	9	16.7	90.7
1940-49	45	114	20.2	74.5	12	22.2	74.1
1950-59	35	88	15.6	54.3	12	22.2	51.9
1960-65	28	103	18.3	38.7	7	13.0	29.6
1966	24	18	3.2	20.4	1	1.9	16.7
1967	23	26	4.6	17.2	2	3.7	14.8
1968	22	22	3.9	12.6	1	1.9	11.1
1969	21	18	3.2	8.7	1	1.9	9.3
1970	20	14	2.5	5.5	2	3.7	7.4
1971	19	14	2.5	3.0	2	3.7	3.7
1972	18	3	.5	.5	0	0.0	0.0
Grads.		564	100.0		54	100.0	
Non-Grads.		33			5		
Total		597			59		

[a]One each from the graduation years 1915, 1917, 1918; the remaining 28 were graduated during the 1920's.

The information in Table 4 is further summarized in Table 5, showing assumed age at selected percentiles of the distribution of graduation years.

Table 5

Assumed Age at Selected Percentiles
Of High School Graduation Year

%ile	New York City		Upstate	
	Age	Graduation Year	Age	Graduation Year
12½	57	1933	60	1930
37½	44	1946	45	1945
50	37	1953	40	1950
62½	30	1960	34	1956
87½	23	1967	23	1967

The data of Tables 3-5 make evident that the questionnaire respondents were not concentrated in the 18-24 age range originally anticipated for holders of entry-level positions--if a beginning occupation is defined as one held by a young person. Both by mail and telephone (except to firms with fewer than 10 employees) the interest in "entry-level" positions was stressed. The actual age distributions mandate a definition of "entry-level" in terms of job duties, not chronological age of the employee. There are here, as in many occupational fields, persons who spend their entire working lives at relatively low-level jobs.

A second probable factor accounting for the large number of older persons parallels Luxner's finding (see p. 2, this report) that only 6.9 percent of the bookkeeping graduates of the Pittsburgh high schools in 1969 who were available for employment were able to find bookkeeping positions. Here, also, there do not seem to be many bookkeeping job openings for new high school graduates.

A third factor, leading to many responses from holders of nonentry positions, is also pertinent. As many employers explained by phone, only their more experienced employees were engaged in the kinds of activities listed in the questionnaire (see the quoted comments, top of p. 18, this report).

The various reasons given above explain the large numbers of older respondents. Illustratively: Table 3 shows that more than three-fourths of the

questionnaire respondents were at least 25 years old; Table 4 shows that one-fifth of the NYC respondents and one-sixth of the Upstate respondents were in the age range 18-24; Table 5 shows that half the respondents were in their late thirties or older, having been graduated from high school not later than the early 1950's, with only one-eighth at age 23 or younger in high school graduating classes since 1967. The phenomena pointed out here apply, as Tables 3-5 show, somewhat more markedly to small-firm Upstate employees than to the wider range of firm sizes of New York City respondents.

Work Experience and Education

The status of respondents with respect to formal school training in bookkeeping or accounting was determined via questionnaire items 5 and 9; their work experience in bookkeeping, from items 11 (for those with no experience prior to their present job) and 23b (for the others). Some had no school training in bookkeeping, others only in high school, others only in some post-high school institution, and still others both in high school and post-high school. The percentage distributions for experience and bookkeeping education are shown for NYC and for Upstate respondents in Tables 6 and 7.

Table 6

Percentage Distribution of Bookkeeping Work Experience and Education Among NYC Respondents

Amount of Work Experience	School Training in Bookkeeping/Accounting				Total		
	None (N = 166)	HS Only (N = 196)	HS + Post HS (N = 118)	Post HS Only (N = 117)	N	%	Cum. %
Less than 1 yr.	1.5	1.8	1.0	1.0	32	5.4	5.4
1 yr.	4.2	2.5	.8	1.5	54	9.0	14.4
2 yrs.	3.0	1.3	2.3	2.0	52	8.7	23.1
3-4 yrs.	4.4	2.7	2.3	2.5	71	11.9	35.0
5-9 yrs.	3.7	5.5	3.8	4.7	106	17.8	52.8
10-19 yrs.	6.0	12.1	4.5	4.4	161	27.0	79.8
20-29 yrs.	3.5	4.5	3.4	3.0	86	14.4	94.2
30+ yrs.	1.5	2.3	1.5	.5	35	5.9	100.1
Total	27.8	32.8	19.8	19.6	597	100.1	

As shown in the last row of Table 6, nearly two of every seven NYC respon-

dents had had no formal school training in bookkeeping; nearly one-third undertook only high school training; the remaining two-fifths were equally divided between those who took bookkeeping/accounting courses only after high school graduation or both in high school and subsequently. With regard to work experience in the bookkeeping field (last column of Table 6), only a little more than one-third of the NYC respondents had less than five years of experiences; median work experience (taking the 5-9 yr. range as 60-119 months) was 9½ years. As thus far characterized, the typical NYC respondent was, in 1972, a 37-year-old female with 9½ years of work experience, with five chances out of seven to have had some formal school training in bookkeeping.

Upstate data, based on the 51 of the 59 respondents who supplied both experience and education information, are displayed in Table 7.

Table 7

Percentage Distribution of Bookkeeping Work Experience and Education Among Upstate Respondents

Amount of Work Experience	School Training in Bookkeeping/Accounting				Total		
	None (N = 17)	HS Only (N = 25)	HS + Post HS (N = 5)	Post HS Only (N = 4)	N	%	Cum. %
Less than 1 yr.	9.8	0.0	3.9	0.0	7	13.7	13.7
1 yr.	3.9	3.9	0.0	0.0	4	7.8	21.5
2 yrs.	0.0	5.9	0.0	0.0	3	5.9	27.4
3-4 yrs.	2.0	7.8	2.0	2.0	7	13.7	41.1
5-9 yrs.	7.8	13.7	0.0	2.0	12	23.5	64.6
10-19 yrs.	5.9	5.9	2.0	2.0	8	15.7	80.3
20-29 yrs.	3.9	9.8	0.0	2.0	8	15.7	96.0
30+ yrs.	0.0	2.0	2.0	0.0	2	3.9	99.9
Total	33.3	49.0	9.8	7.8	51	99.9	

For the data of Table 7 and throughout for Upstate respondents, the numbers are too small to warrant firm generalizations or inferences: one NYC respondent is one-sixth of one percent of such respondents, whereas one Upstate respondent is nearly two percent of such respondents. For whatever the differences may be worth (Table 6 vs. Table 7), a larger percentage of

Upstate respondents took bookkeeping only in high school or had no formal school training in bookkeeping; fewer undertook post-high school courses in bookkeeping/accounting. The typical Upstate bookkeeper, as thus far characterized, was, in 1972, a 40-year-old female with 7 years 1 month of work experience in the bookkeeping field, with two out of three chances to have had some formal school training in bookkeeping.

Finally, if the "None" column of Tables 6 and 7 is divided after the 3-4 yrs. experience point, it appears that employment of those without formal school training has been appreciably stable over the years; about half of those without school training have had less than 5 years work experience as bookkeepers, the other half have had 5 or more years of work experience. To put it another way, the employment of those without school training has been at about the same rate in recent years as in the past years.

High School Bookkeeping Training. Question 5 of the questionnaire solicits high school bookkeeping background as: none, 1 or 2 years of Recordkeeping (offered to NYC students not judged capable of mastering classical bookkeeping), and 1, 2, or 3 years of Bookkeeping. Only 3 of the 56 Upstate respondents who supplied the information reported having taken Recordkeeping in high school (perhaps in New York City before moving Upstate). Accordingly, with NYC respondents supplying the bulk of all data, information on their high school backgrounds in bookkeeping can usefully be viewed against citywide enrollments in Recordkeeping/Bookkeeping for the selected years shown in Table 8 (next page).

As shown in Table 8, Recordkeeping enrollment over the 10-year period increased from about 3 of every 10 enrollments (1962) to 3 of every 8 enrollments (1971); whereas Bookkeeping enrollments declined in complementary fashion from 7 out of 10 (1962) to 5 out of 8 (1971). Across the 10-year period Recordkeeping accounted for one-third of enrollments, Bookkeeping for two-thirds. The last column of Table 8 reveals continuous decline in total enrollments, most sharply in the most recent years. One might suppose that the decline in total enrollments and the shift toward increased Recordkeeping registrations as a percentage of total enrollment are in large part attributable to the changing character of the school population during the period shown. Less interest in office occupations, particularly those requiring arithmetic aptitudes, seems probable. Whatever the causal factors may be, a final bit of detail (not shown in Table 8) is that, citywide, about four-

fifths (82.2%) of Recordkeeping enrollment was for 1 year, not more; and about two-thirds of Bookkeeping enrollment was for 1 year, not more--over the 10-year period.

Table 8

Citywide High School Recordkeeping/Bookkeeping Enrollment In Four Selected Years*

(In Percentages)

Year	Percent		N	% Change[c]
	Record-keeping[a]	Bookkeeping[b]		
1962	29.9	70.0	42,425	
1965	35.4	64.6	39,370	- 7.2
1968	32.7	67.3	37,986	- 3.5
1971	37.8	62.2	31,334	-17.5
All 4 years	33.7	66.3	151,115	-26.1[d]
N	50,902	100,213		

*Data supplied by the Bureau of Business and Distributive Education, NYC Board of Education.

[a]Includes Recordkeeping 1, 2, and 3 plus (in 1971) Cooperative Bookkeeping/Recordkeeping.

[b]Includes Bookkeeping 1, 2, 3, Accelerated Bookkeeping, College Bookkeeping, plus (in 1971) Exploratory Bookkeeping, Pre-Technical Accounting, and Miscellaneous Accounting.

[c]From previous year listed.

[d]1971 in relation to 1962.

It may be mentioned in passing that for the school year applicable to our youngest respondents (1972), the trend evident in Table 8 is even more marked: 47.8 percent of all enrollments were in Recordkeeping, 52.2 percent in Bookkeeping.

With citywide enrollment data as a background for assessing the involvement of Recordkeeping and of Bookkeeping students in bookkeeping occupations, the New York City portion of the data for our questionnaire respondents (Table 9, next page) shows only 4 percent with a high school background in Rec-

ordkeeping (24 of 597 persons)--despite the 33.7 percent citywide enrollment in Recordkeeping. (While it is certainly not assumed that all 597 respondents attended a NYC high school, the most reasonable assumption is that most of them did.) Table 9 displays the details.

Table 9

High School Bookkeeping Background of Respondents

Pertinent HS Training	New York City			Upstate		
	N		%	N		%
None	283		47.4	23		40.4
Recordkeeping						
1 year	18	3.0		3		5.3
2 years	6	1.0	4.0			
Bookkeeping						
1 year	90	15.1		12	21.1	
2 years	104	17.4		17	29.8	
3 years	96	16.1	48.6	2	3.5	54.4
No response	0			2		
Total	597		100.0	59		100.1

The data of Table 9 considered in relation to those of Table 8 reveal that Recordkeeping students do not appear to obtain employment in bookkeeping occupations. Moreover, the sharp contrast between citywide Recordkeeping enrollment (Table 8) and Recordkeeping in the high school background of NYC respondents (Table 9) is not a function of recent enrollment shifts: Although details are not shown here, examination of high school background in relation to high school graduation year shows the Recordkeeping respondents to be distributed across the range of graduation years (e.g., 15 of the 24 Recordkeeping respondents were graduated prior to 1966, 9 prior to 1960).

From the data of Tables 8 and 9 it seems proper to infer that--

> The New York City high school curriculum in Recordkeeping is not noticeably preparing the kinds of students it attracts for employment in occupations involving the processing of financial information. At least, the needs of New York City employers for such persons are being met almost entirely (and in approximately equal proportions) by those with high school Bookkeeping training and by the presumably academic majors who have no directly relevant high school background.

One might surmise that the academic majors (the "None" respondents of Table 9) who fill nearly half the bookkeeping positions are largely those who do not write shorthand, who are not skilled typists (or who prefer not to earn a living at the typewriter), who are not interested in retail sales positions, and who, for lack of an available alternative of interest to them, enter the white-collar occupation of bookkeeping/accounting. Furthermore, as data arising from Labor Department interviews (given later in this report) lavishly demonstrate, entry positions in the processing of financial data below the level of college trained accountant seem to require little more than general clerical skills, particularly arithmetic. At least, as will be shown in later tables, employers often do not require previous school training in bookkeeping, and they usually find a few days to a few months of on-the-job training to be sufficient for inexperienced and untrained new employees.

Post-High School Education (Summarized). Details on post-high school education were solicited in questionnaire items 6-9. In summary fashion at this point (details later), the status of respondents with respect to post-high school education and the taking of bookkeeping/accounting courses post-high school is shown in Table 10. Therein, "Bk/Ac" stands for bookkeeping or accounting (courses).

Table 10

Post-High School Education and Bk/Ac Courses of Respondents

Status	New York City				Upstate			
	N		%		N		%	
No Post-HS Education	226		37.9		35		59.3	
Some Post-HS Education								
No Bk/Ac Courses	136		22.8		13		22.0	
Some Bk/Ac Courses	235	371	39.4	62.1	11	24	18.6	40.7
Total		597		100.0		59		100.0

"Post" in Table 10 means after leaving high school, not necessarily instruction at a level above high school curricula. For example, 26 of the NYC respondents later attended evening high school programs presumably of-

fering instruction parallel to the day high schools.[18] In private business school, junior, and senior college instruction, Bk/Ac courses ranged from the equivalent of high school bookkeeping through college accounting aimed at eventual CPA licensing. As Table 10 shows, rather more NYC than Upstate respondents undertook some schooling after high school and, among such persons, Bk/Ac courses were more prevalent among NYC respondents.

Total Formal Schooling in Bookkeeping/Accounting. Table 11 (for NYC respondents) and Table 12 (for Upstate respondents) combine the data of Tables 9 and 10 by showing the incidence of post-high school Bk/Ac courses according to high school background--in a phrase, total job-relevant schooling.

Table 11

High School and Post-High School Job-Relevant Schooling Among NYC Respondents*

High School Background	No Post-HS Bk/Ac		Some Post-HS Bk/Ac		Total	
	N	%	N	%	N	%
None	166	27.8	117	19.6	283	47.4
Recordkeeping	18	3.0	6	1.0	24	4.0
Bookkeeping	178	29.8	112	18.8	290	48.6
Total	362	60.6	235	39.4	597	100.0

*Row 1 shows, for example, that of 283 respondents without high school training, 117 undertook later training, 166 did not. In all, 39.4% of respondents took one or more Bk/Ac courses after leaving high school.

As shown, the job-relevant post-high school training rates are the same for those with and without prior high school training (19.6 vs. 1.0 + 18.8). Prior high school training does not especially stimulate further training. The employed bookkeeper who feels a need for school training undertakes it, whatever the high school background. Concerning the two instances of "no response" (Table 12), to avoid loss of data in later displays of more important information, the two are counted as "None" for high school background.[19]

[18] Elicited via phone from respondents who reported no post-high school attendance (in business school or college, Question 6), but 1 or more post-high school Bk/Ac courses (Question 9).

[19] Telephoning NYC respondents to remedy omitted questionnaire responses

Table 12

High School and Post-High School Job-Relevant Schooling Among Upstate Respondents*

High School Background	No Post-HS Bk/Ac		Some Post-HS Bk/Ac		Total	
	N	%	N	%	N	%
None	19	32.2	4	6.8	23	39.0
Recordkeeping	2	3.4	1	1.7	3	5.1
Bookkeeping	26	44.1	5	8.5	31	52.5
No response	1	1.7	1	1.7	2	3.4
Total	48	81.4	11	18.6	59	100.0

*See footnote of Table 11.

A final summary of educational status in terms of job-relevant courses at any school level is displayed in Table 13.

Table 13

Incidence and School Level of Job-Relevant Training

Training	NYC		Upstate	
	N	%	N	%
None	166	27.8	19	32.2
HS only	196	32.8	28	47.5
Post-HS only	117	19.6	6	10.2
HS + Post-HS	118	19.8	6	10.2
Total	597	100.0	59	100.1

Upstate respondents are too few in number to justify any generalizations, and the several contrasts with NYC outcomes have been mentioned in passing, earlier. Based on NYC respondents, the data of Table 13 may be put as follows: Of every 20 holders of bookkeeping/accounting positions who responded to our questionnaire, 5 had no pertinent school training, 7 had only high

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nearly always led to a "no" or "none" or zero response--which is characteristic for questionnaires. Accordingly, in some instances Upstate omissions (not checked by phone) were considered to be "no" or equivalent responses.

school training, and another 4 each took Bk/Ac courses only after high school or in addition to high school training. In all, a little more than seven-tenths of the NYC respondents had at least some job-relevant formal schooling, as did two-thirds of the Upstate respondents.

Details of Post-High School Education. The Upstate data suffer from too many omitted responses and, besides, involve too few persons to justify reporting the details of post-high school education. Confined, then, to NYC respondents, mention was made earlier (Footnote 18, p. 34) of 26 persons who informed us, upon telephone inquiry, that they attended adult programs in evening high schools (or, occasionally, a college extension program or an employer-supplied course). Those persons excepted, Table 14 provides details on the presence or absence of Bk/Ac courses at the various post-high school levels. As shown, some persons attended several post-high school institutions (e.g., BS + JC + SC means business school and junior college and senior college).

Table 14

Incidence of Bk/Ac Courses at Various Post-High School Levels

School Level	Bk/Ac Courses		Total		Median No. of Bk/Ac Courses
	None	1 - 5+	N	% (of 345)	
Business school	51	56	107	31.0	1
Junior college	18	18	36	10.4	2-3
Senior college	56	93	149	43.2	3
BS + JC	5	10	15	4.3	4
BS + SC	4	17	21	6.1	2
JC + SC	2	9	11	3.2	5+
BS + JC + SC	0	6	6	1.7	3-4
Subtotal	136	209[a]	345	99.9	2
Elsewhere			26		
No Post HS Education			226		
Total			597		

[a]These persons, plus the 26 "Elsewhere" respondents, make up the 235 NYC respondents shown in Table 10 as having taken at least one post-high school bookkeeping or accounting course.

The 209 respondents who took from 1 to 5 or more bookkeeping or accounting courses after leaving high school make up three-fifths (60.6%) of the 345 persons who undertook some higher education; and those 345 persons make up 57.8 percent of all NYC respondents. Or, worded as a generalization, nearly three-fifths of employed bookkeepers who respond to an inquiry addressed to entry-level persons undertake some higher education; among them, three-fifths include one or more bookkeeping or accounting courses in that higher education. (Still finer details--in relation to high school background--were displayed in Table 11, p. 34.) However, as will later be shown in detail, substantial numbers of NYC respondents held higher-level, not entry-level, positions. Thus, the percentages given above apply to higher education and job-relevant courses in that education across the range of bookkeeping/accounting occupations represented by our respondents. Details on number of post-high school, job-relevant courses are displayed in Table 15.

Table 15

Distribution of Post-High School Bookkeeping/Accounting Courses

	Number of Courses					Total
	1	2	3	4	5+	
Number	64	50	19	26	50	209
Percent	30.6	23.9	9.1	12.4	23.9	99.9

As shown in Table 15, job-relevant post high school education consists most often of a little (one or two courses) or a lot (five or more courses)--typically (median), of two courses. Also to be inferred (from Table 14) is that the 5+ persons are those who attended senior college, the ones who are the junior and senior accountants among our respondents.

College attendance and graduation rates are shown in Table 16.

Table 16

Junior and Senior College Attendance and Graduation Rates

School Level	Attended		Percent Graduated	
	N	% of 597	Of Attendees	Of 597
Junior college	68	11.4	70.6	8.0
Senior college	187	31.3	48.1	15.1

Typical (median) duration of attendance at business school, junior college and senior college is, respectively, 1, 2, and 3 years, ranging, respectively, from ½ to 2, ½ to 2, and ½ to 5+ years.

The data of Tables 14-16 bear in a number of ways on the purposes of this investigation. For the reasons given on page 27, interpretation of that data applies not only to the primary interest in the high school bookkeeping curriculum, but also to what might be called a sociology of bookkeeping/accounting occupations--the latter, an unanticipated dividend supplied by respondents who hold higher-level positions and by those with some or complete higher education whose relatively low-level job duties are in keeping with the routine finding of earlier occupational studies that show numbers of college-educated persons working at sub-college occupations.

In any event, one might take "entry level" to mean without previous job experience. If so, a college accounting major hired as a junior accountant upon college graduation has accepted an entry-level position. Responses from such persons contribute to the second or sociological findings. Even for the primary interest associated with high school curricula, it is necessary to define entry level as referring to job duties, not experience. If certain types of "accounting clerk" positions are available to high school graduates without previous job experience, a person who has held such a position for ten years holds an "entry-level" position, despite his job tenure. Also, at least some of the job-relevant post-high school education whose details are given in the preceding tables is no doubt the equivalent of high school bookkeeping, not college accounting.

The data of Tables 14-16, then, in part provide a partial explanation of the job-activities details given later in this report--across the spectrum of job levels from the lowliest clerk to a company's chief financial officer; in part, they bear on the sociology of bookkeeping/accounting occupations. Summarizing the tabled data: Table 16 shows that about 1 out of 10 respondents attended a junior college; the 7 of every 10 of them who were graduated make up about one-twelfth of all our respondents. About 3 out of 10 attended senior college, nearly half of whom were graduated--the graduates comprising about one-seventh of all our respondents. In all, a little more than two-fifths (42.7%) of our respondents attended junior and/or senior college, of whom 54.4 percent (nearly one-fourth, 23.1%, of all respondents) were graduated. Including attendance at a private business school or evening

high school, as shown in Table 11, nearly two-fifths (39.4%) of all respondents took one or more post-high school bookkeeping or accounting courses, typically two such courses (Table 14).

Summarizing all job relevant education: The typical NYC respondent is as likely as not to have had some job-relevant high school training (Table 9)--followed, in 5 instances out of 8, by some post-high school education that is more likely than not to have included at least one job-relevant course (Table 10). Job-relevant post-high school training is equally likely among those with and without prior high school training (Table 11) and, if undertaken, is likely to have consisted of two courses (Table 15). Junior college attendees most often graduate; senior college attendees, about half the time; the typical NYC respondent, however, is unlikely to be a junior or senior college graduate (Table 16). Finally, the variety (and combinations) of school levels shown in Table 14 attest to the availability of post-high school education in a city like New York. One must suppose that the frequency of job-relevant post-high school education would be lower in areas not so well supplied with post-high school educational institutions.

Present-Job Tenure and Prior Employment Status. Total work experience of respondents was displayed in Tables 6 and 7 (pp. 28, 29). The 131 job activities of the questionnaire, however, apply to the respondent's present job, and details of present-job tenure provide another part of the background or framework for the later findings on job activities. As a preliminary, the data on previous employment, by age, are shown in Table 17.

Table 17

Previous Employment Status of Respondents, by Age

Employment Status and Age	New York City			Upstate		
	N		%	N		%
Previously employed						
18-24	57		9.5	3		5.1
25+	342		57.3	32		54.2
Subtotal		399	66.8		35	59.3
Not previously employed						
18-24	75		12.6	7		11.9
25+	123		20.6	17		28.8
Subtotal		198	33.2		24	40.7
Total		597	100.0		59	100.0

Table 17 shows that about two-thirds of the NYC respondents and three-fifths of the Upstate respondents had previous employment; i.e, their present jobs were not their first jobs. Inevitably, the majority of those persons were the older ones. Duration of present-job tenure is given in Table 18.

Table 18

Duration of Job Tenure with Present Employer

Tenure	New York City			Upstate		
	N	%	Cum. %	N	%	Cum. %
To 6 mos.	58	9.7	9.7	9	16.4	16.4
7-11 mos.	32	5.4	15.1	2	3.6	20.0
1 yr.	92	15.4	30.5	7	12.7	32.7
2 yrs.	76	12.7	43.2	3	5.5	38.2
3-4 yrs.	103	17.3	60.5	8	14.5	52.7
5-9 yrs.	121	20.3	80.7	13	23.6	76.4
10-19 yrs.	79	13.2	94.0	9	16.4	92.7
20-29 yrs.	29	4.9	98.8	3	5.5	98.2
30+ yrs.	7	1.2	100.0	1	1.8	100.0
No response	0			4		
Total	597			59		
Median tenure	3 yrs. 10 mos.			4 yrs. 9 mos.		

Although the modal (highest-frequency) job-tenure interval is 5-9 years, the Cumulative Percent columns of Table 18 show that three-fifths of the NYC respondents and a little more than half the Upstate respondents had held their present jobs for less than 5 years--the typical (median) NYC respondent for a little less than 4 years, the typical Upstate respondent for a little less than 5 years.

As a final bit of background, the extent of job mobility among NYC respondents (number of different employers for whom they have worked during their entire job history) is shown in Table 19. Upstate data are not shown because of too many omitted responses. As inferred from the percentages of Table 19, the modal (most frequent) number of employers is 1, and three-fifths of the NYC respondents have worked for not more than 2 different employers. The discrepancy between the 38.7% entry of Table 19 and the 33.2% entry of Table

17 is not unambiguously explainable. Different interpretations by respondents of the number of employers involved in instances of promotion to a different unit (and supervisor) within the same company possibly account for the discrepancy.

Table 19

Job Mobility of NYC Respondents

(In Percentages)

Number of Different Employers							Total
1	2	3	4	5	6	7+	
38.7	21.3	21.3	10.0	5.0	2.3	1.3	99.9

Present-Job Titles

The results presented so far provide general background for considering the present-job duties of respondents and the relationship of those duties to various aspects of respondents' backgrounds. At a first, global level of job description, to be followed by finer details, the job titles are given next.

The respondents' self-reported job titles, solicited in Question 10, often turned out to be too general, not particularly descriptive of their actual job duties. Employees of smaller firms tended to call themselves bookkeepers or some variant thereof; those in the larger firms with a formal personnel structure tended to call themselves "accounting clerks." Such catch-all titles agree with the experience of the U.S. Department of Labor over the years (illustrated in the account of their interview findings later in this report) that bookkeeping is one of the occupational fields in which job titles tend to be untrustworthy--not particularly descriptive of actual job duties. One of many such instances was mentioned earlier: a so-called "accounting clerk" who was in fact a junior accountant; another is a so-called "comptometer operator" who was in fact an assistant bookkeeper.

Because of the frequent inaccuracy or imprecision of self-reported job titles, those that were inaccurate or unnecessarily general were replaced by more accurate or precise ones--on the basis of responses to the list of 131 job activities. "General" was retained as part of a job title only when the detailed activities fell under several of the lettered categories into

which the 131 job activities of the questionnaire were organized. The resulting corrected, revised-for-accuracy-and-precision job titles consisted, for NYC respondents, of 115 different job titles (57 of which occurred only once each); for Upstate respondents there were 20 different titles (10 of which occurred once each).[20] Across all respondents, NYC plus Upstate, there were 121 different job titles, 60 of which occurred once each. To distinguish the kinds of job duties at entry levels from those at higher levels of job responsibility, the 61 titles that occurred more than once are shown in Table 20, by level (as defined in Table 1, p. 19), accompanied by the number of respondents holding each title. For present purposes, those who held "mixed" positions (bookkeeping plus other duties) are shown as such, rather than by "level" (33 or 5.5% of the NYC respondents and 17 or 28.8% of the Upstate respondents). The percentages in parentheses accompanying some of the "mixed" titles show the proportion of total job duties specifically in bookkeeping/accounting.

Table 20

Job Title of Respondents, by Level of Job Responsibility

Title (by Level)	NYC	Up-state	Title (by Level)	NYC	Up-state
Level 1 (Clerk or Machine Operator)			Level 2 (Accounting Clerk)		
			Payroll clerk	18	1
General clerk	27	0	A/R clerk	14	0
Billing clerk	14	0	General clerk	12	0
Bkpg. machine opr.	12	0	Receipts & disburs. clerk	11	1
DP (Data Proc.) Gen'l.	9	0	A/P (Accts. Payable) clerk	9	0
Figures clerk	8	0	Receipts & receivables	6	0
A/R (Accts. Rec.) clerk	8	0	A/R & Payroll	6	0
DP clerk, payroll	6	0	Bank reconciliation clerk	4	0
Records clerk	3	0	Expense ledger clerk	3	0
Proof machine opr.	1	2	DP clerk	3	0
Cash receipts clerk	2	1	Disbursements clerk	3	0
Payroll forms clerk	2	0	A/R & A/P clerk	2	0
Cash disbursements clerk	2	0	Cost clerk	2	0
Insurance clerk	2	0	Others (1 each)	18	0
Keypunch opr.	2	0			
DP, inventory control	2	0			
Others (1 each)	12	0			

(Continued on the next page)

[20] Because job titles were assigned as each questionnaire was screened, in turn, it could not be foreseen in advance whether some new title would recur.

Table 20 (Continued)

Title (by Level)	NYC	Up-state	Title (by Level)	NYC	Up-state
Level 3 (Asst. Bookkeeper)			Level 5 (Jr. Accountant)		
Asst. bkpr. general	77	10	Junior acct.	10	2
A/R	26	0	Acct./Bkpr.	8	0
A/P	20	0	Acctg. asst.	3	0
Receipts & disburse.	15	2	Asst. acct.	2	0
A/R & A/P	15	0	Jr. cost acct.	2	0
Payroll	7	0	Asst. to Treasurer	2	0
Payroll & A/R	5	1	DP control anal. or supr.	2	0
Receipts & receivables	4	2	Others (1 each)	3	1
Ledger	3	0			
Payroll & disbursements	2	0	Level 6 (Sr. Accountant)		
Billing supervisor	2	0	Accountant	7	0
Inventory records	2	0	Sr. accountant	4	0
Paymaster	2	0	Cost accountant	2	0
Others (1 each)	7	0	Others (1 each)	3	2
Level 4 (Bookkeeper)			"Mixed" Positions		
Bookkeeper, general	75	16	Bkpr./Secretary	11	8
Head or full-charge bkpr.	24	0	Owner or mgr./bkpr. (50%)	4	3
Office Mgr./Bkpr. (90%)*	2	1	Office mgr./bkpr. (50%)	4	1
Others (1 each)	4	0	Gal Friday	4	0
			Office mgr./asst. bkpr.	2	0
			Owner or mgr./bkpr. (75%)	0	2
			Office mgr./bkpr. (75%)	0	2
			Others (1 each)	8	1

*This title is shown here, rather than as a "mixed" position, because at least 90 percent of the job duties were in bookkeeping--in contrast to the "mixed" positions showing up to 50% or 75% of job duties in bookkeeping. Percentage of job duties in bookkeeping was solicited in Question 15.

To add to the job-title array displayed in Table 20 and to convey something of the flavor of the specificity of job duties, here are some of the "1 each" titles (levels in parentheses): (1) safe deposit box clerk, mutual funds clerk, cashier, accounts clerk; (2) posting clerk, loan clerk, proof clerk, traffic rate clerk; (3) accounting cashier, tax clerk, accts. reconciliation bookkeeper; (4) A/P manager, note teller, bookkeeper/accts. analyst; (5) budget coordinator, assistant comptroller, assistant accounting manager; (6) corporate accountant, comptroller, auditor, tax accountant, financial analyst; (Mixed) dental nurse, A/R clerk and typist, typist/cash records, A/R clerk/telephone operator, administrative assistant/bookkeeper.

The job titles of Table 20 were deliberately assigned to discriminate maximally among the topical areas engaged in by respondents: e.g., accounts receivable vs. accounts payable vs. payroll vs. A/R and payroll vs. A/R and A/P vs. payroll and disbursements, etc. The occasional listing in Table 20 of the same job title at different job-responsibility levels reflects the same topical areas of work duties, but different levels of conceptual knowledge required to execute one's duties within the area(s)--as represented by the job-level criteria of Table 1 (p. 19).

Perhaps the most striking--but not surprising--feature of Table 20 is the relative incidence of "mixed" positions (5.5% of the NYC respondents, but 28.8% of the Upstate respondents). The business major in the smaller schools tends to be required to "take" a little bit of everything: bookkeeping, shorthand, typewriting; and the small employer tends to need a Jacqueline-of-all-trades. Greater specialization in school instruction and in the staffing of large employers prevails in urban centers.

The most important inference to be drawn from the data of Table 20 concerns the narrowness of job activities at the lower levels of job responsibility. As powerfully confirmed by the Labor Department interview findings reported later, lower-level duties tend to consist of a piece of a piece of a piece of an entire accounting operation, rarely requiring more than trivial or narrow knowledge of bookkeeping concepts.

Summary of Job-Responsibility Levels. The holders of "mixed" positions were coded for job level according to the complexity of the recordkeeping/bookkeeping/accounting portion of their total job activities. Across all respondents, the mean and distribution of job levels are shown in Table 21.

Table 21

Mean and Distribution of Job-Responsibility Levels

Level	Description	NYC		Upstate	
		N	%	N	%
1	Clerk	118	19.8	5	8.5
2	Accounting clerk	119	19.9	2	3.4
3	Assistant bookkeeper	199	33.3	20	33.9
4	Bookkeeper	112	18.8	26	44.1
5	Junior accountant	33	5.5	4	6.8
6	Senior accountant	16	2.7	2	3.4
		597	100.0	59	99.9
Mean Job Level		2.78		3.47	

The data of Table 21 reveal that a larger proportion of Upstate than of NYC respondents held higher-level positions; however, the many omissions and inconsistencies in the Upstate returns were not--in contrast to NYC returns--corrected by telephone discussion with the respondent. Thus, the Upstate data of Table 21 are of uncertain reliability at the higher job levels. In particular, both for NYC and Upstate, it is virtually certain that the numbers at Levels 3 and 4 (assistant bookkeeper and bookkeeper) were overestimated, especially at Level 4. As given in the criteria for job-level assignments (Table 1, p. 19), trial-balance preparation is a major component at Level 4. However, as the Labor Department interview findings (given later) convincingly demonstrate, very little of so-called trial balance work among employees below the level of junior accountant consists of the classical trial balance "of the books" intended by job activity No. 88 of the questionnaire. Instead, local figures (e.g., "open items related to C.O.D. sales," to use one of the Labor Department illustrations) "are extracted from control records and listed and totalled for comparison with the books, not a trial balance of the books." Bringing that distinction to bear on the questionnaire respondents was not possible because it had not been foreseen in drafting the job activities section of the questionnaire. There is little question but that many of the questionnaire respondents who gave a "Yes" response to activity No. 88--but whose other activities seemed less consequential--were using the term in a "comparison-with-the-books" sense, not in the classical sense of a trial balance of the books. For that reason, it is probable that the numbers at Level 4 are overestimated; many categorized as "bookkeeper" should probably have been assigned to Level 3, assistant bookkeeper. The oversight that led to the omission of what was to have been activity No. 94 ("Do you prepare a post-closing trial balance?") is, therefore, especially unfortunate. That verbiage is probably less susceptible to loose and inaccurate interpretation by respondents; had the item not been omitted, the accuracy of job-level assignments would have been improved.

The Labor Department findings also suggest that the number of questionnaire respondents at Level 3 (assistant bookkeeper) was overestimated. Much activity associated with the Level-3 criteria of Table 1 was assumed, in interpreting the data, to involve the sorts of journal and ledger forms of "classical" bookkeeping instruction. Instead, as the Labor Department

interviewing of employees and analysis of the record forms used make evident, prelabeled and precoded forms prevail, removing or reducing to greater or lesser extent the need for conceptual knowledge in order to carry out one's job duties.

In effect, the job-activity statements of the questionnaire, prepared by consultants from the educational world, presupposed employment terminology, concepts, and record forms like those of high school bookkeeping instruction. Instead, the face-to-face interviewing of accounting supervisors and workers, and the inspection of the hundreds of record forms actually used by employees, carried out by trained Labor Department occupational analysts, revealed substantial differences between the suppositions of school instruction and actual job practices. This is certainly not to say that the concepts that underlie the maintenance of financial records are inapplicable, but rather that the need to understand those concepts has been removed or lessened by the personnel structures and by the record-form designs in actual use in industry by bookkeeping personnel, especially among the larger employers. As the later account of Labor Department findings will show, it is often computerization that has led to and made possible the record-form designs that remove or reduce the need to understand bookkeeping/accounting concepts among employees below the level of college-trained accountant.

In sum, then, the numbers of questionnaire respondents given in Table 21 (and in later tables) as "bookkeeper" and "assistant bookkeeper" (Levels 4 and 3) are overestimates: some, perhaps many, of the 4's should be 3's; and some, perhaps many, of the 3's should be 2's (accounting clerk). However, there is no reasonably accurate way to correct the frequencies; those of Table 21 prevail throughout the reporting of questionnaire findings.

Personnel Needs in Establishments of Various Sizes

The supposition (see Purpose No. 3, p. 8) that specialization of function and, in turn, less need for higher-level skills would be found among the larger employers is nicely supported by the questionnaire findings. Taking job-responsibility levels 1 and 2 (clerk, accounting clerk) to represent the more modest requirements for specialized conceptual knowledge, the data of Table 22 (next page) show progressive increase in the percentage of all respondents from employers of various sizes who were at Levels 1 or 2--as size of firm (total number of employees) increases: from one-eighth (12.5%) of those in the smallest establishments to five-eighths (64.5%) of those in the

largest establishments. In corroboration of that clear trend, the average (mean) job level of all respondents from establishments of each size goes down as firm size goes up. (The data of Table 22 apply only to New York City respondents; information on size of firm was not available and could not be secured for Upstate respondents.)

Table 22

Percentage Distribution of NYC Respondents by Firm Size and Job Level And Mean Job Level for Each Size of Firm

Size of Firm (No. of Employees)	Job Levels (Percent)		Mean Level	All Respondents	
	1-2	3-6		N	%
0-3[a]	12.5	87.5	3.47	32	5.4
4-9	12.5	87.5	3.25	24	4.0
10-99	24.4	75.6	3.02	209	35.0
100-499	37.9	62.1	2.87	124	20.8
500-999	62.5	37.5	2.38	87	14.6
1000+	64.5	35.5	2.31	121	20.2
Total	39.7	60.3	2.78	597	100.0

[a]Responses can (and did) come from firms with zero employees in instances of owner-operated establishments without employees whose owners did part or all of the bookkeeping.

Subject to the probable overestimation of respondents at Levels 3 and 4 (see pages 45-46), the mean job level of 2.78 places the typical respondent about three-fourths of the way between accounting clerk and assistant bookkeeper. The trends in relation to the personnel requirements in firms of various sizes have been pointed out preceding Table 22 and are evident in the second and third of the four sections of the table.

It is evident from the data of Table 22 that in establishments with fewer than 10 employees, the need is for bookkeeping personnel at about the level of assistant bookkeeper. However, the accounting for the full population of all New York City private employers as of April 1971 (supplied by the New York State Department of Commerce and used as the basis for the sampling plan for the present investigation, as detailed in the Technical Appendix) shows the extent to which the relatively small number of large employers accounts

for large proportions of all employees. The population frequencies supplied by the Commerce Department are displayed in Table 23, together with the estimated cumulative percentage of employees, by size of firm.

Table 23

Distribution of All NYC Private Employers as of April 1971 And Estimated Percentage of Employees, by Firm Size

Size of Firm (No. of Employees)	Median No. of Employees	No. of Firms	Cumulative % (Read Up)	
			Firms	Employees[a]
0-3	1½	112,903	100.0	100.0
4-9	6½	43,663	42.9	95.7
10-99	55	37,255	20.8	88.6
100-499	300	3,145	1.9	36.8
500-999	750	346	.3	12.9
1000+	1000[b]	253	.1	6.4
		197,565		

[a]The frequencies underlying the percentages are arrived at by multiplying the midpoint of each "size" interval (Column 2) by the number of firms in that interval (Column 3).

[b]Taking 1,000 as the midpoint of an interval that begins at 1,000 of course leads to a conservative estimate of the number of employees in such firms.

The cumulative percentages of Table 23 make evident that the small numbers of large firms employ disproportionately large percentages of all employees. Taking 100 as the cutoff point for "large," less than 2 percent of the firms account for nearly three-eighths of employment; using 10 as a cutoff, one-fifth of the employers accounts for more than seven-eighths of employees.[21] In short, although the number of small employers greatly exceeds the number of large ones, the bulk of employment resides in the large firms.[22]

[21]Use of the class-interval midpoint as a multiplier makes the employee percentages estimates, not exact figures. The percentages for firms, on the other hand, are exact.

[22]If "Government" and other nonprivate employers were to be considered, the percentage of total employment accounted for by large employers would

Considering the foregoing phenomenon in relation to the job-level data of Table 22, it is evident that the bulk of the need for bookkeeping personnel among private employers in New York City is at the level of accounting clerk (as defined by the criteria of Table 1, p. 19). The mean or average job level reflects all respondents, including the many holders of nonentry positions. Even so, the large-firm requirement is mainly for persons at Levels 1 and 2, not exceeding "accounting clerk." It follows that--

> High school bookkeeping training at the level of accounting clerk would satisfy a large proportion of the needs of New York City private employers.

More advanced training could be undertaken after employment at one or another post-high school institution--as may be judged desirable by the employee. Indeed, as shown in Table 11 (p. 34), post-high school bookkeeping/accounting courses were taken by about one-fifth of those without job-relevant high school training and by an equal percentage of those who did take recordkeeping or bookkeeping in high school.

Relationships Between Job Level, Education, and Work Experience

Aside from the details of job activities represented by the 131 questionnaire items, the dominating question is surely the one of the extent to which the level of one's job responsibilities depends on formal school training as contrasted with amount of work experience. Closely associated with that question is the issue of promotion. Is it schooling or experience that mostly accounts for (a) level of job responsibility and (b) advancement to more responsible duties? These two issues are treated in turn.

Job level is expressed on the 1-6 scale enumerated in Table 21, and the various levels are defined according to the criteria of Table 1 (p. 19). For various amounts of total work experience in the bookkeeping field and for status with respect to job-relevant school training, the means and standard deviations for job level among NYC respondents are shown in Table 24.

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probably be even greater. Also, the assumption underlying the reported percentages is that clerical employees in general and bookkeeping personnel in particular are in proportion to total employees. In view of the decennial census data for New York City cited on page 6 of this report (viz., 6.3% of the nation's clerical workers in a city that contains 3.9% of the nation's population), it is not unlikely that the proportion of total bookkeeping employment concentrated in large establishments is even greater than that reported above. In the decennial census month of April 1970, by the way, there were 154,396 persons employed as bookkeepers in New York City.

Table 24

Mean and Standard Deviation of Job Level of NYC Respondents,
By Amount of Work Experience and School Training in Bookkeeping

Amount of Work Experience	Job-Relevant School Training								All Respondents			
	None		HS Only		HS + Post HS		Post-HS Only					
	N	Mean	N	Mean	N	Mean	N	Mean	N	%	Mean	S.D.
Less than 1 yr.	9	2.67	11	1.91	6	1.83	6	3.17	32	5.4	2.34	.99
1 yr.	25	2.24	15	1.47	5	2.80	9	3.67	54	9.0	2.31	1.27
2 yrs.	18	1.94	8	2.50	14	2.43	12	3.83	52	8.7	2.60	1.44
3-4 yrs.	26	2.96	16	2.56	14	2.64	15	3.27	71	11.9	2.87	1.34
5-9 yrs.	22	1.86	33	2.52	23	2.70	28	3.00	106	17.8	2.55	1.14
10-19 yrs.	36	2.53	72	2.61	27	3.63	26	3.69	161	27.0	2.94	1.24
20-29 yrs.	21	3.14	27	2.89	20	3.10	18	3.44	86	14.4	3.81	1.19
30+ yrs.	9	3.44	14	3.00	9	2.89	3	4.67	35	5.9	3.23	1.12
Total	166	2.54	196	2.52	118	2.92	117	3.44	597	100.1	2.78	
%	27.8		32.8		19.8		19.6			100.0		
S.D.		1.13		1.03		1.35		1.42				1.26

The details of Table 24 deserve close examination. Consider, first, the job-level means for work experience among all respondents (next to last column of Table 24) in contrast to those for schooling (the "Total" row of the table). For work experience, with occasional zigzags, job responsibility increases with experience, covering a range of 1.5 steps (from 2.31 to 3.81) on the 6-step job-level scale: from the lower end of accounting clerk duties to the upper end of assistant bookkeeper activities. Within each of the four schooling columns, the same general trend toward increased responsibility with increased experience is apparent. To make more apparent the general trend somewhat masked by the zigzags accompanying the rather fine classifications of work experience listed in Table 24, condensing the array leads to job-level means as follows:

Less than 1 yr.	1 yr.	2 yrs.	3-4 yrs.	5+ yrs.
2.34	2.31	2.60	2.87	2.89

From the job levels associated with various amounts of work experience and with various school backgrounds, considered separately and together, it may be inferred that:

> Job responsibility increases with experience regardless of status with respect to job-relevant schooling.

With particular reference to high school training in bookkeeping, the "Total" row of Table 24 shows nothing to choose between those with no job-relevant schooling and those with high school training only (2.54 vs. 2.52). The sizable increase in job level is found among those with post-high school job-relevant training, especially those without prior high school training. Post-high school training to some extent and self-selection to a large extent--not high school training in bookkeeping--appear to explain the differences in job level shown in the "Total" row. That is, the assumption is inescapable that the "None" and "Post-HS only" respondents are mostly the academic, not the business, majors in high school--the ones who are academically more able, as revealed by IQ measures (see Footnote 24, p. 67). Such persons do as well as those with high school training (2.54 vs. 2.52) and, when they undertake post-high school training, clearly exceed in job responsibility those who add post-high school training to high school bookkeeping (3.44 vs. 2.92). The foregoing outcomes are generally applicable to each of the "experience" rows of the table. The summary inference is that--

The job-responsibility levels of bookkeepers are largely determined by experience, general intellectual ability, and post-high school job relevant schooling--not by high school bookkeeping training.

The foregoing inference is merely an instance of a well established general phenomenon: Occupational status is largely a function of the measurable features of experience, ability, and advanced training plus, of course, the hard-to-measure or unmeasurable factors of attitude, drive, chance, luck, and the like.

Concerning post-high school, job-relevant training, increases in job responsibility levels go with increases in number of bookkeeping/accounting courses. For those with no job-relevant, post-high school training, the mean job level is 2.52; for those with 1 or more courses, 3.14. Details are shown in Table 25.

Table 25

Mean Job Level of NYC Respondents,
By Number of Post-High School Bookkeeping/Accounting Courses

1	2	3	4	5+	1-5+	None
2.68	2.83	3.05	3.85	3.84	3.14	2.52

The trends of Table 25 are in accord with common-sense expectations and require no additional comment.

Returning to Table 24, by no means do the inferences drawn suggest that high school training in bookkeeping is valueless. It is conceivable, perhaps even likely, that many of the sorts of students who elect high school bookkeeping (rather than an academic curriculum) could not otherwise obtain and retain jobs in the bookkeeping field. The questionnaire provides no direct data on that hypothesis or supposition. Indirect evidence, however, is supplied by the responses to Question 13, soliciting the respondents' judgments of the extent to which they felt they could have learned (or did learn) to perform their job duties without previous school training. The findings on that question, in relation to schooling status, are displayed later in this report (pp. 68-73).

In the meantime, a basis for interpreting the standard deviations (S.D.'s) of Table 24--measures of the spread of job levels around the average or mean level--is provided by the detailed distributions of job levels according to

schooling status, shown in Table 26.

Table 26

Job-Level Distribution of NYC Respondents, By School Background in Bookkeeping

Job Level	School Background in Bookkeeping								All Respondents	
	None		HS Only		HS + Post-HS		Post-HS Only			
	N	%	N	%	N	%	N	%	N	%
1	40	6.7	44	7.4	20	3.4	14	2.3	118	19.8
2	35	5.9	42	7.0	30	5.0	12	2.0	119	19.9
3	60	10.0	74	12.4	27	4.5	38	6.4	199	33.3
4	25	4.2	36	6.0	26	4.4	25	4.2	112	18.8
5	5	.8	0	0.0	11	1.8	17	2.8	33	5.5
6	1	.2	0	0.0	4	.7	11	1.8	16	2.7
All	166	27.8	196	32.8	118	19.8	117	19.6	597	100.0

Reflected by the smallest S.D. for training in Table 24 (1.03), none of the "HS Only" respondents of Table 26 exceed Level 4. The Table-24 S.D.'s of 1.13, 1.35, and 1.42 reflect the increasing proportion of higher-level job holders (Levels 4-6) as one moves (in Table 26) from "None" through "HS + Post-HS" to "Post-HS Only." Selection factors (i.e., native ability) no doubt largely account for the greater incidence of higher-level positions among "None" than among "HS Only" respondents. Post-HS bookkeeping/accounting training is the major contributor to higher-level positions and, among such persons, selection factors again explain the greater incidence of higher-level positions among the "Post-HS Only" than among the "HS + Post-HS" respondents.

For the respondents classified by schooling as displayed in Table 26, (from "None" through "Post-HS only") the percentages holding positions at the three higher levels, 4-6, are, respectively: 18.7, 18.4, 34.7, and 45.3. Findings such as these make apparent the role of post-high school, job relevant training in obtaining or advancing to higher-level positions in the bookkeeping/accounting field. For amount of work experience in the order listed in the left-hand column of Table 24, the percentages of respondents

at levels 4-6 are, respectively, 3.1, 14.8, 23.1, 31.0, 18.9, 30.4, 39.1 and 44.1. Nontrivial incidence of higher-level positions tends to occur among those with at least three years of experience and, understandably, is most marked among those with 20 or more years of work experience.

In relation to one of the major purposes of this investigation (Purpose No. 4, p. 8), the findings on job responsibility call into question the supposition of those responsible for high school bookkeeping instruction; viz., that high school bookkeeping training is a necessary or clearly helpful contributor to the attainment of higher-level positions. Instead--

> Attainment of higher-level positions in the bookkeeping/accounting field is largely a function of work experience, academic ability, and post-high school bookkeeping training--not high school bookkeeping.

In particular, the important role played by post-high school, job-relevant training in accounting for level of job responsibility is evident in the percentages of persons at each job level who undertook such training. For job levels 1-6, respectively, the percentages are 28.8, 35.3, 32.7, 45.5, 84.8 and 93.8. Such training is increasingly in evidence as job level increases.

Other Relationships with Job-Responsibility Level. The older, more experienced persons tend to be those whose present jobs are not their first jobs. Reflecting that phenomenon, the job-level means for those with and without work experience prior to their present jobs are, respectively, 2.91 and 2.52; for ages 18-24 and 25+, the means are 2.38 and 2.90, respectively.

Proportionately more males than females undertook (a) post-high school education, (b) bookkeeping/accounting courses in that education and, when they did, (c) more such courses. In particular, those at Levels 5 and 6 (junior and senior accountants) are almost exclusively males. Such findings, taken together with the staffing policies of employers, no doubt account for the job-level means for males and females of 3.29 and 2.59, respectively. [Here and throughout this report, findings do not represent the gamut of bookkeeping/accounting occupations, but only those from an entry-level inquiry that happened to elicit responses from some higher-level persons.]

Condensing the data of Table 24, the job level means for those with and without school training are, in turn, 2.88 and 2.54 (S.D.'s of 1.30 and 1.13).

Excluding the 33 holders of "mixed" positions among the 597 NYC respondents, the effects on job level of higher education are apparent. The job-

level means are: (1) for junior college graduates vs. all others, 3.00 vs. 2.77--a difference of .23; (2) for senior college graduates vs. all others, 3.79 vs. 2.61--a difference of 1.18; (3) for those with at least 2 years of senior college and at least 2 post-high school bookkeeping/accounting courses vs. all others, 3.82 vs. 2.62--a difference of 1.20. Even among those without post-high school, job-relevant courses, the difference in native ability implicit in graduation vs. nongraduation among senior college attendees is evident in the graduate vs. nongraduate job-level means of 3.09 vs. 2.44--a difference of .65. The fundamental concomitant of differences in job level is the differences in native ability that distinguish college attendees from others and, in turn, graduates from nongraduates. Add job-relevant higher education to the picture and job-level differences increase further.

Upstate Findings. Supplementing the Upstate findings already presented, the job-level means of those with various job-relevant school backgrounds are displayed in Table 27.

Table 27

Mean Job Level of Upstate Respondents, by Schooling Status

Job-Relevant Schooling	N	%	Mean
None	19	32.2	3.05
HS Only	28	47.5	3.39
HS + Post-HS	6	10.2	4.50
Post-HS Only	6	10.2	4.17
All respondents	59*	100.1	3.47

*Includes 3 persons who failed to report either high-school training status or post-high school status (but not both). The omissions were taken to mean "None," and 1 of the 3 was allocated to "HS Only"; the other 2, to "Post-HS Only."

In contrast to NYC respondents, Table 27 shows larger differences for HS-Only vs. no training (about one-third of a step on the job-level scale). The substantial increases in job responsibility, as one might expect and in agreement with the NYC data, are for those with post-HS job-relevant courses. However, as Table 28 (next page) shows (for the 51 respondents who reported both schooling and experience), such persons are mainly the more experienced ones. For the 19 persons with and the 40 persons without job-relevant school training, the job-level means are, respectively, 3.68 and 3.05.

Table 28

Mean Job Level of Upstate Respondents,
By Amount of Work Experience and School Training in Bookkeeping*

Amount of Work Experience	Job-Relevant School Training								All Respondents		
	None		HS Only		HS + Post HS		Post-HS Only				
	N	Mean	N	Mean	N	Mean	N	Mean	N	%	Mean
Less than 1 yr.	5	3.20			2	4.00			7	13.7	3.43
1 yr.	2	2.00	2	4.50					4	7.8	3.25
2 yrs.			3	3.33					3	5.9	3.33
3-4 yrs.	1	4.00	4	2.75	1	6.00	1	4.00	7	13.7	3.57
5-9 yrs.	4	3.00	7	3.14			1	3.00	12	23.5	3.08
10-19 yrs.	3	3.33	3	4.00	1	4.00	1	5.00	8	15.7	3.88
20-29 yrs.	2	4.00	5	4.00			1	4.00	8	15.7	4.00
30+ yrs.	—	—	1	3.00	1	5.00	—	—	2	3.9	4.00
Total	17	3.18	25	3.48	5	4.60	4	4.00	51		3.53
%	33.3		49.0		9.8		7.8			99.9	

*Standard deviations are not shown because the underlying frequencies are too small to provide useful meaning to a measure of variability.

The cell frequencies of Table 28 are so small that the reliability of the cell means is questionable, permitting no clear inferences. Indeed, interpretation of the job-level means by experience requires condensing the array into fewer and broader intervals (e.g., Less than 3 years, 3-9 years, 10 or more years). With that caveat and in keeping with ordinary expectations, job responsibility increases with amount of work experience.

Concerning schooling, the difference between the overall job-level means of Tables 27 and 28 (3.47 vs. 3.53) means only that the 8 nonrespondents omitted from Table 28 were holders of lower-level positions.

Miscellaneous other findings are:

1. The job-level distribution (see Table 21, p. 44) shows more than three-fourths of Upstate respondents at Levels 3 and 4 (Assistant Bookkeeper and Bookkeeper), with an overall mean of 3.47. In simple relation to the mean job level for 597 NYC respondents of 2.78, it might appear that the presumably small Upstate employers require more sophisticated bookkeeping personnel. Probably so; for the one- or two-person office staff does not permit the extensive hierarchy of job responsibilities of the large employer. However, for the reasons given on pages 45-46--and even more so because there was no telephone check on discrepant or inconsistent responses--Upstate respondents at Levels 3 and 4 were probably overestimated. The "true" job level mean for Upstate respondents is probably less than the obtained one of 3.47--how much less is impossible to say. Another important distinction is that 17 of the 59 Upstate respondents (29%) held "mixed" positions--in contrast to the 33 (5.5%) of the 597 NYC respondents who held "mixed" positions. A larger percentage of Upstate respondents have job duties wholly outside bookkeeping.

2. Entirely in accord with ordinary expectations and correlated both with age and amount of work experience, the job-level means of those with and without work experience prior to their present jobs (Ns of 35 and 24) are, respectively, 3.71 and 3.12.

3. By sex, the job-level means for the 13 males and 46 females were, respectively, 4.84 and 3.47. By age, for the 10 and 49 persons below and above age 25, the means were, respectively, 2.80 and 3.61.

No findings are given on college attendance and number of post-high school bookkeeping/accounting courses because too few were involved to warrant reporting. Such trends as were apparent paralleled those for NYC respondents.

In sum, the Upstate findings on job responsibility are in general agreement with those for NYC respondents--with respect to trends associated with variations in amount of work experience and job-relevant schooling. The important distinction is in the wider range of bookkeeping job duties, leading to higher average job-responsibility levels, of the one- or two-person office staffs in the small establishments presumed to prevail among the employers of our Upstate respondents. In that connection, it was mentioned earlier (p. 21) that Upstate data could be thought of as adding to the NYC data for small employers. In the event, it would appear that Upstate investigation was needless; for Upstate job levels parallel those for NYC employees in small establishments. The mean job-level for Upstate respondents (3.47) is identical to that shown in Table 22 (p. 47) for the 32 NYC employees in firms with 0-3 employees. Pool the 24 NYC respondents in firms with 4-9 employees (mean job level of 3.25, Table 22) with the 32 in still smaller establishments, and the result is a job-level mean for 56 employees in NYC firms with fewer than 10 employees of 3.36--little different from the Upstate mean of 3.47. Furthermore, even that small difference could easily lie in the lesser reliability of Upstate data due to the probable overestimation at the higher job levels mentioned in paragraph "1." on page 57. Although small differences in details as between NYC and Upstate respondents have been reported and will later be reported, job level--based as it is on actual job duties--is probably the single best index of work activities. It should be apparent, then, that at least for bookkeeping occupations and no doubt for many others, narrowness or breadth of job duties and responsibilities is a function of staffing policies tightly associated with size of establishment (total number of employees), not with geography. In studies like this one, geography is irrelevant; size of firm is the proper major basis for sampling.

In any event, the close correspondence of mean job levels for Upstate respondents and for small-firm NYC respondents supports the propriety of pooling the data, resulting in a job-level mean for the 59 Upstate respondents plus the 56 small-firm NYC respondents of 3.43. To the extent that the mean provides an approximate index, one might infer that--

> Preparation for small-firm employment (fewer than 10 employees) could be represented in the high schools by a curriculum extending to job activities in the "assistant bookkeeper" range--as defined by the criteria of Table 1 (p. 19).

Summary Inferences from Job-Level Findings. The major issues to which the job-level data of this section of the report have been addressed is the question of the dependence of job responsibility on formal school training and on work experience. At least for bookkeeping occupations (i.e., for data based very largely on employees below the level of junior or senior accountant), there is a clear trend toward increases in job responsibility with increases in amount of work experience, regardless of differences in formal school training (Table 24, p. 50). It may therefore be inferred that--

> Work experience is more important than job-relevant schooling in determining one's job responsibilities in bookkeeping occupations.

In addition, the differences in job levels associated with differences in schooling (Table 24) suggest that--

> Post-high school, job-relevant education--whether undertaken prior to or after employment[23]--is a more important determinant of job responsibilities than the presence or absence of high school bookkeeping training.

Finally, consideration of the job-level data by size of firm (Tables 22, 23; pp. 47-48)--in relation to the job-level criteria of Table 1 (p. 19)--suggests two inferences for high school bookkeeping curricula, as follows:

> For schools serving geographical areas containing mainly small employers (fewer than 10 employees), high school training extending to job activities in the "assistant bookkeeper" range would serve employment needs. That is, it would provide training for the job duties of the typical employee across the range of work experience from a few months to more than 30 years--thereby more than adequately meeting requirements for initial employment.
>
> In large urban centers, in which large employers account for an overwhelming percentage of all bookkeeping employment, high school training at the level of "accounting clerk" would cover the job activities of the typical employee over a wide range of work experience and would easily meet the requirements for initial employment in the larger firms, the ones that provide the bulk of employment.

The last-mentioned inference is strongly supported by the Labor Department findings from direct employer/employee interviews and from analysis of the record forms used on the job (discussed later in this report). The central and simple fact is this: Higher-level positions are filled from the ranks of experienced or accounting-trained persons--not by new high school graduates, whatever the content of their high school bookkeeping courses.

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[23] The questionnaire did not inquire into when post-high school education was undertaken.

Promotion in Bookkeeping Occupations

Questions 18 and 19 on page 1 of the questionnaire inquire into promotion under one's present employer and into the job title just prior to promotion. Partly as an approximate check on responses to the promotion questions and partly as an index of fixed vs. fluid job duties, Question 12 asked: "How long have you worked at your present duties for your present employer?" This section of the report presents the findings on promotion in relation to school training background, post-high school education, job level, size of firm, and age. The underlying issue is: What are the correlates of promotion in bookkeeping occupations? The term "promotion," however, seems to have been understood by some respondents as meaning an increase in salary rather than, as was intended by Question 18, a change "to more advanced job duties" (the quoted phrase was not, but should have been, included in the original wording of Question 18). Accordingly, the number who reported themselves as having been promoted is probably somewhat overestimated.

Change in Job Duties Under Present Employer. A person engaged in his present job duties (Question 12) for less time than his total present employment (Question 11) experienced a change in job duties during his present employment. Among NYC respondents, 35 percent had a change in job duties, 65 percent did not. The Upstate percentages are 18 and 82.

Promotion in Relation to Other Variables

Because only 10 (one-sixth) of the 59 Upstate respondents reported having been promoted, the findings presented here apply entirely to the 257 (43 percent) of the 597 New York City respondents who reported having been promoted "since beginning work for your present employer."

Age. Dichotomized for age as under 24 and 25+, the promotion rates, respectively, are 38.6% and 44.3%. On the one hand, promotion tends more often to occur among the older (i.e., more experienced) persons; on the other, the small difference between the two promotion rates merely reflects the general phenomenon of persons low on any continuum having more room to move up (a large percentage of Privates moves up to Corporal; a smaller percentage of Majors is promoted to Lieutenant Colonel).

School Background in Bookkeeping/Accounting. For the categories (1) None, (2) HS Only, (3) HS + Post-HS, and (4) Post HS Only, the percentages promoted are, respectively, 45.8, 39.8, 43.6, and 44.1. The modest differences among these promotion rates suggest that promotion is little influenced by school-

ing and, by inference, more influenced by work experience and caliber of job performance.

High School Bookkeeping Background. Details are displayed in Table 29. In it, R-1 and R-2 stand for 1 and 2 years of high school Recordkeeping instruction, while B-1, B-2, and B-3 represent 1, 2, and 3 years of high school Bookkeeping instruction.

Table 29

Promotion Rates Among NYC Respondents
With Various High School Backgrounds

N and %	None	R-1	R-2	B-1	B-2	B-3	Total
Total N	282	18	6	90	104	97	597
Promoted							
N	127	9	1	36	40	44	257
% of Total	45.0	50.0	16.7	40.0	38.5	45.4	43.0

Supporting the inference previously drawn about the relative contribution of job-relevant schooling vs. job experience and job performance in accounting for promotion in bookkeeping occupations, the differences in promotion rates displayed in Table 29 are rather modest. The 24 Recordkeeping enrolees are too small in number to justify a confident inference, and the 10 who were promoted make up 41.7 percent of the 24 enrolees.

Number of Post-High School Job-Relevant Courses. Greater maturity and motivation necessarily distinguish involvement in post-high school training from high school curricular choices. Furthermore, it should probably be assumed that one or two post-high school courses are probably little more than the equivalent in content of high school bookkeeping, whereas three or more courses probably extend into accounting. If so, the influence on promotion of advanced (i.e., accounting) training is evident in the promotion rates among those who undertook none, 1, 2, 3, 4, or 5+ post-high school, job relevant courses. In turn, the promotion percentages are: 42.3, 42.9, 38.9, 60.0, 57.1, and 37.3. The sharp rise occurs at 3 such courses; and the fall-off (to 37.3%) among those who took 5 or more courses reflects the fact that most of them are college-trained accountants who enter employment as such and have little further room to progress.

Job Level. For the persons at job levels 1 to 6 (assigned on the basis of the criteria of Table 1, p. 19), the promotion percentages are, respectively: 38.1, 47.9, 43.2, 42.9, 45.5, and 37.5. On the one hand, the narrow range suggests approximately equal promotion opportunities at or from the various levels of job responsibility. The lower rates (at the lowest and highest job-responsibility levels) are among the clerks whose job duties require little or no conceptual knowledge (Level 1) and those at top levels (senior accountant, Level 6). For whatever the small difference may be worth, the highest rate (47.9% among Level-2 respondents) probably reflects the move from clerk to the job level (Level 2, accounting clerk) representing the highest-frequency staffing in large firms. In them, the numbers of "accounting clerks" swamp any other job category in the bookkeeping/accounting field.

Size of Firm. The foregoing phenomenon and the inference from it are at least mildly supported by the promotion rates in the establishments classified by size according to total number of employees. For the sizes 0-3, 4-9, 10-99, 100-499, 500-999, and 1000+, the promotion rates are: 40.6, 33.3, 36.4, 45.2, 46.0, and 52.9. With one reversal at the small-size end, the promotion rates increase with size of firm. To say that the chance of promotion increases with size of firm is not, however, to say that higher-level jobs are more frequently available in the larger firms. Indeed, the reverse appears to be more likely. The very large firms are substantially repositories of "accounting clerks"; the smaller ones tend to require a do-everything assistant bookkeeper or bookkeeper. College-level accounting training appears to be the prerequisite for the highest-level jobs in the large firms; and, according to the Labor Department findings, such positions are commonly filled from the ranks of college-trained accountants rather than by promotion from within among those at accounting clerk/bookkeeper levels. With relatively few exceptions, without college training in accounting, job experience and job performance can take one no further than "bookkeeper" levels. Of course, few would have supposed otherwise.

Type of Job Duties Prior to Promotion. With very few exceptions, the job titles supplied in response to Question 19 tended to be very general ones. Although it was easy to identify job titles prior to promotion that were "Not office work" or "Office work but not bookkeeping," discriminating from the reported prior job titles bookkeeping duties that were like vs. unlike

present duties was often rather tenuous--so that the frequencies for those two categories are of uncertain reliability. In any event, the findings are displayed in Table 30.

Table 30

Type of Job Duties Prior to Promotion with Present Employer

Type of Job Duties	N	%
Not office work	17	6.7
Office work, but not bookkeeping	46	18.3
Bookkeeping duties like the present ones	61	24.2
Bookkeeping duties different from present ones	128	50.8
No response to job title	5	--
	257	100.0

The phenomenon dealt with in Table 30 was not considered important enough to warrant associating prior-to-promotion title with school background data. No doubt some of those in the first two categories of Table 30 ("not office work"; "office work, but not bookkeeping") had prior school training, either in high school or undertaken later on (perhaps in the interest of change of work); whereas others in those two categories may have learned the necessary skills and knowledges from fellow employees. Second, subject to the uncertain reliability of inferring from job title prior bookkeeping duties like and different from present ones, an extremely conservative assumption would be that those in the "like" category were "promoted" to a raise in salary, not necessarily reflecting more advanced job duties. On that assumption, the "true" promotion rate for NYC respondents would be about 33 percent, rather than the earlier-reported 43 percent. In any event, movement from other occupations into bookkeeping, as well as within bookkeeping, is evident in the data of Table 30.

Promotion Possibilities and Judged Bases for Promotion

Question 16 asked respondents to estimate promotion possibilities in their firm (good, fair, poor, don't know); and Question 20 asked what promotion is mostly based on in your firm (mostly formal school training, mostly job experience and performance, school training and job experience about equally). Surprisingly, two of every seven respondents (28.3%) gave a "don't know" response to promotion possibilities. Details, by size of firm, are displayed

in Table 31. The mean values arise from weights of 3-2-1 assigned to Good, Fair, and Poor--excluding the "Don't Know" respondents.

Table 31

Promotion Possibilities Among Employers of Various Sizes

No. of Employees	Mean*	Percent Don't Know	Total N
0-3	1.30	28.1	32
4-9	1.33	37.5	24
10-99	1.81	30.6	209
100-499	1.87	24.2	124
500-999	1.82	31.0	87
1000+	2.05	24.8	121
Total	1.85	28.3	597

*With weights of 3-2-1 assigned to good-fair-poor, the higher the mean, the better the chances of promotion.

In the judgment of respondents and on the average, promotion possibilities were less than "Fair" (mean of 1.85, where 2 = Fair and 1 = Poor). The estimated possibilities for promotion tend to increase with size of firm; but, of course, those in the very small firms tend already to be at assistant bookkeeper/bookkeeper levels, from which little if any further promotion is possible. Also, the very largest firms (1000+ employees) tend to have a detailed personnel structure, with finer gradations in job titles, responsibilities and salaries than is characteristic among smaller firms. In addition, as mentioned earlier, greater chances for promotion do not connote high-level openings. The large-firm employee promoted from clerk to accounting clerk is at a lower level than the assistant bookkeeper or bookkeeper in the small firm who is already at the ceiling for job level in such firms--and who knows it. Promotion aside, it should be remembered that the bulk of urban bookkeeping employment is in the large firms (Table 23, p. 48). In any event, from the less-than-"Fair" judgment of respondents, bookkeeping does not appear to be an occupational field characterized by exciting promotion possibilities. The foregoing inference is in relation to "Fair" as an absolute term--not to the outcomes relative to what they might be in other occupational fields had inquiry been made in other fields.

Judged Bases for Promotion. Of the 552 persons who responded to the question of whether promotion depends mostly on school training, on job experience and performance, or on both equally, the percentages in each category were: school, 5.6%; job experience and performance, 66.8%; both equally, 27.5%. On the thesis that the judged bases for promotion might vary among employees according to (a) school background, (b) present job level, and (c) size of firm, the judgments were examined in relation to the three variables enumerated, with weights of 1-2-3 assigned, respectively, to mostly school, both equally, mostly job experience and performance. For school background, the findings are shown in Table 32.

Table 32

Judged Bases for Promotion
Among NYC Respondents with Various School Backgrounds in Bookkeeping
(In percentages)

School Training	Mostly School	Mostly Experience	Both Equally	N	Mean*
None	4.4	76.1	19.5	159	2.72
HS Only	4.6	71.4	24.0	175	2.67
HS + Post-HS	8.0	54.0	38.1	113	2.46
Post-HS Only	6.7	59.0	34.3	105	2.52
Total	5.6	66.8	27.5	552	2.61
No response				45	
All persons				597	

*The higher the mean, the greater the importance of experience.

The percentages for the three categories of judgments shown in Table 32 are in the approximate ratio of 1 to 12 to 5. Job experience/performance is clearly the dominating basis for promotion--as one might expect it to be in any occupational field. The overall mean of 2.61 is a little more than halfway between "both equally" and "experience." As one might expect, the judgments to some extent reflect school background: Those with no school training in bookkeeping least often consider schooling the major basis for promotion and most often credit job experience and performance. The large differences in percentages and in mean judgments separate those with post-high school training in bookkeeping from all others--an outcome in accord with earlier data showing post-high school training in bookkeeping to be

more influential than high school training. In the present instance, that is, in relation to the judgments of those with no school background, the value of schooling is larger at post-high school than at high school levels. Upstate, although only 10 persons reported they had been promoted, 43 responded to the question on bases for promotion, for whom the frequencies (in parentheses) were: school (1), job (37), both equally (5)--resulting in an overall mean of 2.84. For the smaller firms presumably predominating in the three small Upstate cities, experience is even more important in relation to schooling than it is among NYC respondents as the judged major basis for promotion. More of the Upstate than of the NYC respondents, however, had no job-relevant schooling (33.3% vs. 27.8%--Tables 7 and 6, pp. 29, 28).

Another reflection of the greater importance of post-high school than of high school, job-relevant schooling is the greater importance given to schooling among those at the highest job levels. Table 26 (p. 53) shows that 43 of the 49 NYC respondents at job levels 5 and 6 had some post-high school training in bookkeeping/accounting. For the six job levels in turn, the mean judgments on bases for promotion are: 2.69, 2.47, 2.73, 2.59, 2.37, 2.38. Those at job levels 5 and 6 give more weight to schooling than the others.

Finally, and paralleling the Upstate findings given above, small-firm employees give more weight to experience in relation to schooling than do employees in larger firms. For the six firm sizes in turn (0-3, 4-9, 10-99, 100-499, 500-999, and 1000+ employees) the means for bases for promotion among NYC respondents are: 2.71, 2.68, 2.75, 2.59, 2.38, and 2.55. For 0-99 vs. 100 or more employees, the means are 2.74 and 2.52, respectively.

Summary and Inferences

Varying interpretations of the term "promotion" (a raise in salary vs. assignment to more advanced job duties) require estimating promotion rates among NYC respondents as something between 33 and 43 percent, varying little among those with and without high school and/or post-high school training in bookkeeping/accounting (p. 60), as well as among those with various high school backgrounds (Table 29). Promotion rates were highest among those with at least three post-high school, job-relevant courses (p. 61), varied little with job level, but tended to increase with size of firm (p. 62). About one-fourth of promotions were from a nonbookkeeping occupation; the other three-fourths, within bookkeeping (Table 30). About two-sevenths of New York City respondents did not know what the promotion possibilities were

in their firms; the remaining respondents judged their chances of promotion to be less than "Fair" (at 1.85 where 3 = good, 2 = fair, 1 = poor), but improving with increase in size of firm (Table 31). The last-mentioned finding principally reflects the detailed personnel structures in the larger firms and the prevalence of "accounting clerk" positions to which lower-level "clerks" can be promoted.

As judged bases for promotion (mostly school training, mostly job experience and performance, schooling and work experience equally), for every person who thought schooling was the major basis, five thought school and work were equally important, and twelve gave major weight to job experience and performance (Table 32). Schooling increases in importance with size of firm and with job level (which is the same as saying "with post-high school, job-relevant training")--differences in high school background having little differential effect (pp. 65-66). Nonetheless, regardless of job level, size of firm, or school background, the dominating basis for promotion was judged by respondents to be job experience and performance.

In relation to Purpose No. 4 (p. 8), the inference from the findings on promotion is this:

> Advancement in bookkeeping positions is dominatingly judged by respondents to depend on job experience and performance. Differences in high school background have little differential effect. The influence of schooling begins to have some effect at post-high school levels characterized by at least three bookkeeping/accounting courses. In a phrase, promotion is mainly a function of job experience and performance and, secondarily, of advanced post-high school training.

Any possible supposition on the part of those responsible for high school bookkeeping instruction that such instruction provides a basis for advancement is a gratuitous one, not supported by the present data. Those with no job-relevant training whatever are promoted somewhat more frequently than those who had only high school training and, understandably, give less weight to schooling as a basis for promotion. Selection factors are probably operative here: more academic ability among nonbusiness majors in high school.[24]

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[24] IQ scores correlate variously with achievement in different school subjects and are, by virtue of their correlations, at least moderately predictive of school success. Studies routinely show lower IQs among business than among other majors. Poindexter (1963), for example, in examining the records of 5,200 graduates of 33 high schools (mainly in Iowa), found the mean IQ of business majors to be 6 points below that of other majors, with 7.9% of business majors and 11.7% of other majors having IQs in excess of 120. The trend of the Poindexter findings is typical of such studies, and the amount of the difference varies with the sample of students whose records are examined.

Judged Contribution of Schooling to Job Performance

Much of the information thus far presented on the question of the dependence of bookkeeping occupations on formal school training in bookkeeping has been objective; that is, independent of the judgments of respondents. For example, the school training status of respondents has been shown in relation to various features of occupational status. As a second way to examine the extent of the need for formal school training among holders of bookkeeping positions, the opinions of respondents were solicited, via Question Nos. 13, 21d, and 23c--worded identically except that No. 13 referred to "present" job duties; No. 21d, to "first job in the field of recordkeeping/bookkeeping/accounting"; and No. 23c, to "all jobs" in the bookkeeping field. The wording common to all three questions is:

> In your opinion could you have learned (or did you learn) to perform your duties in the general field of recordkeeping/bookkeeping/accounting <u>without</u> previous school training?
>
> Entirely ___ Mostly ___ Partly ___ No ___

A possible alternative wording, considered at the time of drafting the questionnaire items, is: "In your opinion do you think school training in recordkeeping/bookkeeping/accounting helped you (or could have helped you) to perform your job duties?" That wording was rejected in favor of the phrasing quoted previously because rejecting at least some benefit from school training is hardly conceivable, either logically or psychologically; the question would have been analogous to, "Do you think a better diet would improve your health?"--hardly permitting of any answer but "Yes," and thereby failing to provide useful information on the question at issue. More exactly, those in the "None" category for formal school training in bookkeeping, being employed, have a basis for responding to the actual wording of the question, whereas the rejected wording hardly permits of anything but a positive response. In the event (and as anticipated), those without school training assigned less value to it than those with school training. Details follow.

By way of preliminary overview, the response percentages to each of the four response options are shown in Table 33 (next page) for NYC and for Upstate respondents. In it, the "First Job" and "All Jobs" information applies only to those whose present jobs are not their first jobs in the bookkeeping field.

Table 33

Judged Ability to Perform (a) Present Job, (b) First Job, And (c) All Jobs--Without School Training

(In Percentages)

Judgment	NYC			Upstate		
	Present Job	First Job	All Jobs	Present Job	First Job	All Jobs
Entirely	29.8	29.5	21.7	27.1	33.3	21.6
Mostly	24.0	22.8	24.0	27.1	22.2	24.3
Partly	27.6	22.5	26.9	33.9	19.4	32.4
No	18.6	25.2	27.4	11.9	25.0	21.6
	100.0	100.0	100.0	100.0	99.9	99.9
N	597	404	405	59	36	37

Most evident in Table 33 is the distribution of responses across all four judgments, rather than a concentration in one or two of them. That is, of course, what one would expect from employees whose job duties range in their demand for conceptual knowledge of the kind that characterizes school instruction. Condensing the data display (by adding the percentages for "Entirely" and "Mostly") shows that about half (46%-56%) of all respondents estimated that they could (or could have) perform(ed) their present, first, and all jobs in the bookkeeping field "entirely" or "mostly" without formal school training in bookkeeping.

It should be recognized, however, that--among the more experienced respondents--the accuracy or reliability of the "first job" and "all jobs" judgments suffers from the lapse of time. That is, estimation of the value of an event (schooling) far back in time is probably less certain, in contrast to judgment of more recent events. Indeed, it seems plausible to expect that the less recent the schooling and the more the job experience, the lower the judged value of schooling. Sorting out the data in the three dimensions of schooling content, schooling recency, and job experience was not judged worth the effort, however: three-dimensional displays resist comprehension, and many cell frequencies would probably be very small. Thus, the comment about the reliability of first-job and all-jobs judgments is left as a speculation.

In Relation to School Background

With weights assigned as shown in square brackets just below the title of Table 34, the mean value of formal school training in bookkeeping according to school training status is shown next. With weights assigned as given, the higher the mean, the greater the judged value of schooling. Occasional very small differences in frequencies (Ns) between those of Table 34 and earlier tables reflect missing or uninterpretable responses to one or another of the variables that were cross-tabulated.

Table 34

Weighted Mean Judgment of NYC Respondents with Various School Backgrounds Of Their Ability to Perform Their (a) Present Job, (b) First Job, And (c) All Jobs--Without School Training

[Weights: Entirely = 0, Mostly = 1, Partly = 2, No = 3]

Training Status*	Present Job		First Job		All Jobs	
	N	Mean	N	Mean	N	Mean
Only HS Rec.	18	1.11	12	1.08	12	1.25
Only HS Bk.	178	1.55	134	1.72	134	1.81
Only Post-HS	118	1.61	82	1.43	82	1.68
HS Rec. + Post-HS	6	1.67	5	1.20	5	1.40
HS Bk. + Post HS	111	1.86	83	1.87	83	2.17
Total with training	431	1.63	316	1.65	316	1.84
No school training	166	.63	83	.64	83	.66
All respondents	597	1.35	399	1.44	399	1.60

*Rec. = Recordkeeping, Bk. = Bookkeeping.

The most striking contrast in the data of Table 34, as one might anticipate, is the negligible value given to school training (means in the .60's) by those without such training--in relation to the clearly higher mean values of those with school training in the occupational field (1.63 to 1.84). Those without school training apparently feel they have suffered little loss. For "present job," those with school training fall, on the average, a little closer to "partly" than to "mostly" able to perform their work without school training (mean of 1.63). "First job" performance by those with school training is also judged to have been modestly assisted by school training (mean of 1.65); whereas, subsumed under the all-jobs mean of 1.84 is the powerful up-

ward effect of post-high school training variously undertaken, presumably, before or during employment in bookkeeping/accounting. The first-job and all-job means for those with school training as well as for all respondents are consistent with earlier evidence pointing to the modest knowledge required for an entry job and the greater importance of post-high school than of high school training. The especially low means for those in the "Only HS Rec." group are also consistent with earlier evidence pointing to the low usefulness of "Recordkeeping" instruction for employment in bookkeeping occupations. Whatever job activities are covered in Recordkeeping instruction would seem to be ones readily learned on the job, making school training unnecessary.

The inference about the greater effects of post-high school than of high school training is nicely substantiated by the findings on the value of schooling among those who undertook various numbers of post-high school, job-relevant courses, displayed in Table 35.

Table 35

Weighted Mean Judgment of NYC Respondents with Various Numbers of Post-HS Courses of Their Ability to Perform Their (a) Present Job, (b) First Job, (c) All Jobs--Without School Training

[Weights: Entirely = 0, Mostly = 1, Partly = 2, No = 3]

Number of Post-HS Courses	Present Job		First Job		All Jobs	
	N	Mean	N	Mean	N	Mean
1	77	1.49	59	1.41	59	1.71
2	54	1.83	41	1.83	41	1.98
3	25	1.80	16	1.75	16	2.12
4	28	1.96	18	1.72	18	2.11
5+	51	1.82	37	2.00	37	2.00
Total with Post-HS Courses	235	1.72	171	1.70	171	1.92
No Post-HS Courses	362	1.10	228	1.07	228	1.36
All respondents	597	1.35	399	1.44	399	1.60

With occasional zigzags, the trend toward increase in the judged value of school with increase in number of post-high school bookkeeping/accounting courses is evident in the data of Table 35. Although the differences between the means of Tables 34 and 35 are small, the direction of the differences shows the greater value attached to post-high school than to high school

training in bookkeeping/accounting. The summary inferences are these:

> In the judgment of respondents of their ability to perform their work without school training: (1) Recordkeeping instruction has little value; (2) Those without school training assign nominal value to schooling, while those with school training assign moderate value (between "mostly" and "partly" able to perform without school training); (3) Post-high school job-relevant training is more valuable than high school training, increasing with the number of post-high school courses; its effects, moreover, apply more to an entire job history than to first or present jobs in the bookkeeping/accounting field.

Upstate. As shown in Table 10 (p. 33), there were only 24 Upstate respondents who undertook post-high school education, and only 11 of them included bookkeeping/accounting in that education. Because so few were involved, the mean judgments of Upstate respondents are shown according to high school background only, regardless of post-high school education status.

Table 36

Weighted Mean Judgment of Upstate Respondents with Various High School Backgrounds of Their Ability to Perform Their (a) Present Job, (b) First Job, and (c) All Jobs--Without School Training

[Weights: Entirely = 0, Mostly = 1, Partly = 2, No = 3]

High School Training Status	Present Job		First Job		All Jobs	
	N	Mean	N	Mean	N	Mean
Recordkeeping, 1 year	3	1.00	2	.50	2	1.00
Bookkeeping, 1 year	12	1.42	6	.83	6	1.33
Bookkeeping, 2 years	17	1.88	11	1.82	11	2.36
Bookkeeping, 3 years	2	2.00	1	2.00	1	2.00
Total with training	34	1.65	20	1.40	20	1.90
No high school training	23	.74	14	1.14	14	.86
All respondents	57	1.28	34	1.29	35	1.47

Although the Upstate data of Table 36 do not reflect post-high school education, the means are very like those of Table 34 for NYC respondents and support the same inferences: less value assigned to school training by those without such training and means for those with school training falling between "mostly" and "partly" able to perform job duties without school training. Also, means increase with the sophistication and amount of training.

Finally, the appreciable increase in the means for 2d-year over 1st-year bookkeeping (1.88 vs. 1.42, 1.82 vs. .83, 2.36 vs. 1.33) suggests clear value for the second year of high school bookkeeping instruction among Upstate respondents and, by inference, a 2d-year curriculum that is indeed "advanced" bookkeeping. By contrast, the means of NYC respondents are:

High School Training	Present Job	First Job	All Jobs
Bookkeeping 1	1.56	1.63	1.70
Bookkeeping 2	1.69	1.69	1.95

In contrast to the differences for Upstate respondents, those for NYC respondents are much smaller, lending support to the inference drawn earlier in this report that the New York City curriculum over two years of bookkeeping is narrower than the Upstate curriculum across both years. At least the added contribution to job performance of a second year of high school bookkeeping instruction is rather larger among Upstate than among NYC respondents. A contributing factor could be lesser academic ability among 2-year than among 1-year Bookkeeping students in New York City.

In any event, the first two of the three inferences for NYC respondents (top of page 72) also apply to Upstate respondents. Too few Upstate respondents engaged in post-high school bookkeeping/accounting courses to justify reporting the details; nonetheless, it must be supposed that its effects parallel those for NYC respondents and that the third inference also applies to Upstate respondents.

In Relation to Job Level

The judgments of NYC and Upstate respondents of their ability to perform their present jobs without previous school training is shown, by present job level, in Table 37 (next page). Parallel data for "first job" and "all jobs" are not shown because little meaning could be attached to such information in relation to present job level. In accord with a number of the inferences drawn earlier in this report, the data of Table 37 show little judged need for school training at the lower job levels (the means for Levels 1-3 are close to "mostly" able to perform without previous school training). At first blush, the increase in means with increase in job level shown in Table 37 might also suggest that school training is judged to be increasingly important for the obtaining of increasingly responsible jobs. The extent to

which that hypothesis is a tenable one is less ambiguously tested by the means in the "Total" row of Table 24 (p. 50), showing substantial effects on job level of post-high school, job-relevant schooling, but not of high school training alone. The data of Table 37 are regardless of amount of work experience; and, as shown in Table 24, job level also increases with work experience. In Table 37, therefore, job-level is confounded with amount of work experience. Its data preclude unambiguous interpretation; and it is unfortunate that the investigator did not anticipate the interpretive problem in time to arrange for cross-tabulating the respondents' judgments of the value of job-relevant schooling with "amount of work experience." A final possibility reflecting the common expectation of educators--but not tested or testable by any of the data of the present investigation--is that those who advance furthest occupationally are the highly motivated, academically oriented students who, for that very reason, place the highest value on schooling. Even so, taken at their face (but subject to the reservation that amount of work experience increases with job level), the data of Table 37 do suggest increased indebtedness to job-relevant schooling with increase in job responsibility.

Table 37

Weighted Mean Judgment of Ability to Perform Present Job Without Previous School Training--By Present Job Level

Variable	Job Level							
	1 Clerk	2 Acctg. Clerk	3 Asst. Bkkpr.	4 Bkkpr.	5 Jr. Acct.	6 Sr. Acct.	Mixed*	Total
New York City								
N	113	111	187	105	32	16	33	597
Mean	1.16	1.26	1.33	1.47	1.53	2.38	1.39	1.35
Upstate								
N	3	2	15	17	3	2	17	59
Mean	.67	.50	1.20	1.59	2.67	2.00	1.00	1.30

*These are respondents with job duties in addition to bookkeeping.

The mean for Bookkeeper (Level 4) is just about at the midpoint of the 0-3 rating scale, midway between indispensable and useless in their judgment of

the value of job-relevant schooling for their job performance. Among holders of lower-level positions, schooling is less valuable; among the accountants, more valuable. These findings are in entire accord with common-sense expectations.

Hiring Requirements of Employers

Respondents were asked (Question 21) whether their employer on their first job in the bookkeeping field required previous school training and (Question 14) whether their present employer required (a) previous school training and (b) previous job experience.

First Job in the Bookkeeping Field

The questionable accuracy or precision of self-assigned job titles has been mentioned earlier: a phenomenon that applies particularly to the first-job titles solicited in Question 21a, which, unlike present job title (Question 10), could not be verified or corrected by examination of detailed job duties. Subject to the foregoing reservation, a job-responsibility level on the 6-step scale was assigned as best as possible to the first-job titles given in response to Question 21a. The resulting distribution of first-job level is probably inflated; that is, few beginners could conceivably start as "bookkeeper" as defined by the criteria of Table 1 (p. 19); yet "bookkeeper" or some variant of that term was a common self-designation. In any event, the distributions of first-job levels, of employers' requirements for previous school training among respondents at each level, and of median first-job tenure are displayed, for New York City respondents, in Table 38.

Table 38

Employers' Requirements for Previous School Training on First Job, By Level, and Median First-Job Tenure--Among NYC Respondents

First-Job Level				Previous Schooling Required		Median Job Tenure
	Title	N	%	N	%	
1	Clerk	116	30.7	38	32.8	3-4 yrs.
2	Acctg. Clerk	105	27.8	48	45.7	2 yrs.
3	Asst. Bkkpr.	76	20.1	38	50.0	3-4 yrs.
4	Bkkpr.	56	14.8	33	58.9	5-9 yrs.
5/6	Jr./Sr. Acct.	10	2.6	10	100.0	2 yrs.
	General Office	15	4.0	8	53.3	3-4 yrs.
All respondents		378	100.0	175	46.3	3-4 yrs.

The data of Table 38 are confined to those whose present employers are not their first employers and who responded to the questions of whether their employers required previous school training and of the duration of their first employment in the bookkeeping field. The last row of the table shows that 175 (46.3%) of the 378 such respondents were required by their employers to have previous, job-relevant school training. Reading down the second of the three sections of Table 38, the incidence of employers' requirements for previous school training increases with job level--from about one-third of the clerks to all of the accountants. Also, the typical entrant to bookkeeping employment holds his first job for 3-4 years.

The finding most relevant to the major purpose of this entire investigation is contained in the first section of Table 38--showing that nearly three-fifths of entry jobs (30.7% + 27.8% = 58.5%) in the bookkeeping field require either no or nominal conceptual knowledge of bookkeeping. That estimate is, in fact, a conservative one in view of the earlier-mentioned (p. 45) probable overestimation of persons at Levels 3 and 4.

Upstate, the number of respondents to the various first-job questions varied from 29 to 35 and therefore does not justify a detailed display of findings. Among them, first-job tenure ranged from less than 6 months for 12 persons to more than 20 years for 7 persons, averaging 2 years. The inflation in self-assigned job titles (i.e., the tendency to use "bookkeeper" as a general catch-all for any job activities) is especially evident in the contrast between 13 out of 35 respondents (37.1%) reporting an employer's requirement for previous school training--but 27 out of 29 persons (93.1%) assigning themselves job titles at levels 3-6 (8, 6, 5, and 8 persons at levels 3, 4, 5, 6, respectively). In short, the Upstate data are so suspect as hardly to be worth reporting.

Present Job

The percentage of New York City and of Upstate respondents who reported that their present employers required them to have previous school training in bookkeeping and previous work experience in the bookkeeping field are displayed in Table 39 (next page)--in relation to level of job responsibility. As shown, the incidence of requirement for previous schooling and work experience tends to increase with job level, as one would expect. At all job levels, the higher percentages for experience than for schooling demonstrate the greater importance of experience for employment in the field.

Table 39

Employers' Requirements for Previous Schooling and Experience For Present Job--By Present-Job Level

Job Level	N	NYC "Yes" Percentage		N	Upstate "Yes" Percentage	
		Schooling	Experience		Schooling	Experience
1 Clerk	118	16.1	35.6	5	0.0	0.0
2 Acctg. Clerk	119	32.8	49.6	2	0.0	0.0
3 Asst. Bkkpr.	199	30.2	58.8	20	25.0	30.0
4 Bkkpr.	112	42.9	57.1	26	19.2	34.6
5 Jr. Acct.	33	57.6	42.4	4	50.0	25.0
6 Sr. Acct.	16	68.8	75.0	2	100.0	100.0
All persons	597	32.8	56.8	59	22.0	30.5

The Upstate data of Table 39 are somewhat open to question because of the absence of telephone follow-up to check inconsistencies bearing on improving the reliability or precision of job title (and, in turn, job level) assignments. Confined, then, to New York City data: with the unexplainable exception of junior accountants, at each job level experience is more often required than schooling. Employers' requirements for previous schooling for present employment range from one-sixth of the clerks to more than two-thirds of the senior accountants; the experience range is from a little more than one-third of the clerks to three-fourths of the senior accountants.

Summary Inferences About Schooling and Work Experience

The information reported thus far in this "Results" chapter displays clear internal consistency. The data on employers' requirements are in entire agreement with the earlier-reported judgments of respondents (Tables 33-37) and with the volume of still earlier information relating job responsibility to variations in school background and in amount of work experience (Tables 24-28). In relation to assessment of high school curricula in recordkeeping and bookkeeping, the inferences are inescapable that--

> Experience is more important than schooling in determining one's job duties in the bookkeeping/accounting field. Post-high school, job-relevant schooling, not high school training, is the powerful determinant of job responsibilities and is especially influential in attaining the higher-level jobs beyond the reach of the entry-level job ap-

> plicant. For such jobs (clerk and accounting clerk) the requirement for and benefit from job-relevant high school training is nominal; in particular, the curriculum in Recordkeeping in the New York City high schools is nonfunctional. High school training modest in content and duration--largely confined to accounting-clerk activities--would serve as adequate preparation for entry employment in the bookkeeping field in urban centers in which the great preponderance of employment opportunities reside in the relatively small numbers of large employers.

The foregoing summary inferences arise from the questionnaire data, but are in thorough accord with the more precise information supplied by the Labor Department investigation reported later. The small-employer, Upstate questionnaire data are too full of omitted responses and inconsistencies to permit inferences as firm as those for New York City respondents. However, in advance of detailed consideration of the 131 job activities listed in the questionnaire, it appears that--

> High school instruction should stop short of financial statements. Big-city instruction at the level of journals and ledgers and small-city instruction extending, possibly, to the trial balance is all that seems justifiable.

Other Aspects of Job History

In the expectation--a naive one, as it turned out--that a change of employers would usually be for reasons of better pay associated with more responsible job duties, Question 22 asked for the respondent's job title just prior to work with his present employer; that is, job title for his previous employer. To provide information on the hierarchy of bookkeeping occupations in relation to promotion possibilities, Question 17 asked for "the next higher position above yours." The outcomes, however, did not lend themselves to their intended use and are therefore reported here rather than in the earlier discussion of promotion. In the interest of examining what might be called the "chain of command" in bookkeeping/accounting occupations, Question 32 asked for "the job title of your immediate superior." The findings on (a) previous job title, (b) title of next higher position above the current one, and (c) job title of immediate superior are presented next.

Job Title for Previous Employer. Among the many telephone conversations with respondents to remedy omitted responses and remove inconsistencies in responses, there were scores of instances in which a switch of employers was not for reasons of job advancement. More convenient location, more pleasant work atmosphere were among the explanations for a prior job title higher than one's present one. Not seldom, computerization was responsible for a change

to a less responsible job: numbers of experienced "manual" bookkeepers became, in effect, accounting clerks when their employers computerized their hitherto manual accounting operations or deliberately changed employers in favor of the lighter demands of computerized operations in contrast to the pressures and responsibilities of manual systems. Whatever the reasons, for the 387 NYC respondents to whom Question 22 was applicable, the percentage distribution of job titles (converted to grosser categories) just preceding work with one's present employer is shown in Table 40. In it, "different" bookkeeping duties means just that, including ones both less and more responsible than present duties. Decisions on "same" or "different" job duties on prior and present jobs were based on job-responsibility level (on the 6-step scale), inferred as best as possible from the pair of job titles. Since job level inferred from prior job title alone, unaccompanied by job-activity details, is at best a rough approximation, the distinction represented by the last two types of work listed in Table 40 is of uncertain reliability.

Table 40

Type of Work Just Prior to Present Employment

(In Percentages, N = 387)

Type of Work	%
Not office work	2.1
Office work, but not bookkeeping	18.1
Bookkeeping duties same as present ones	39.3
Bookkeeping duties different from present ones	40.6
	100.1

Aside from the effects of computerization mentioned preceding Table 40, nothing of consequence is evident in or was expected from the data on previous job title. As shown, four-fifths of respondents retained bookkeeping jobs; one-fifth entered (or, conceivably, reentered) bookkeeping from other occupations. As was shown in Table 30 (p. 63), one-fourth of NYC respondents changed from a nonbookkeeping to a bookkeeping job under their present employers. No doubt, there are also those who leave bookkeeping for other occupations, either for the same or for a different employer.

Next Higher Position and Position of Immediate Superior (Ques. 17 and 32). Both the variability in personnel titles among firms and the narrow versus large range of titles in small versus large firms, respectively, made the responses to Questions 17 and 32 not very useful for the purposes intended by the questions. In all, some 75 different job titles were supplied by respondents. Condensed as best as possible into seven larger categories, these are displayed in Table 41, together with the percentage of NYC respondents in each category. [Here, as earlier, Upstate data do not justify reporting.]

Table 41

Job Title Category for "Next Higher Position" and for "Immediate Superior"

Job Title Category	Percentage	
	Next Higher Position (N = 535)	Immediate Superior (N = 580)
Intermediate bookkeeper[a]	12.1	2.1
Senior bookkeeper[b]	24.7	23.4
Office manager, supervisor (unspecified) or department head (nonaccounting)[c]	20.4	24.1
Accountant or auditor[d]	15.7	13.1
Company officer[e]	14.6	22.4
Manager, owner, president, partner, boss	10.1	12.9
Other (not elsewhere classified)[f]	2.4	1.9

[a]Among 12 job titles, illustrative ones are: cashier, accounts receivable clerk, assistant supervisor, audit control clerk, section head clerk, senior bookkeeping machine operator.

[b]Among 26 job titles, illustrative ones are: senior bookkeeper, accounting supervisor, paymaster, revenue supervisor, budget coordinator, manager of accounts, general ledger supervisor.

[c]Among 7 job titles, illustrative ones are: credit manager, plant superintendent, traffic manager, office manager.

[d]Auditor, CPA, accountant (asst., junior, senior, staff, chief).

[e]E.g., comptroller, treasurer, vice-president.

[f]E.g., executive secretary, specialist, administrative assistant, timekeeper.

The outcomes displayed in Table 41 suggest a number of things. First, the wording of the questions (Nos. 17 and 32) did not well express their intent. For example, an employee could hardly expect to be "promoted" to owner, although some gave "owner" in response to Question 17. Often, in the smaller firms, there is no one between the worker and the top job, a position to which "promotion" is not an applicable concept. Second, one's immediate superior was sometimes a general administrator rather than an accounting specialist. Third, the large numbers of titles used by employers are often not closely indicative of actual job duties. In general, the frequency with which the same title was given for "next higher position" (Question 17) and for "immediate superior" (Question 32) reveals the state of affairs and the difficult of securing, via a mailed questionnaire, pertinent information of the kind sought in Questions 17 and 32.

This concludes the presentation of findings on the education and employment history of respondents and their interrelationships (covered by Questions 1-23 on the first page of the questionnaire). Treated next, prior to consideration of the fine details of job activities represented by Items 1-132, are the findings on Questions 24-36 (plus those on No. 15), which provide something of a bird's eye or condensed view of major work features and of duties peripheral to the bookkeeping activities.[25]

Overview of Present Job Duties

Treated in turn are: (1) percentage of total present-job duties directly in recordkeeping/bookkeeping/accounting, (2) use of the typewriter and other business machines, (3) involvement in electronic data processing, (4) percentage of work time devoted to making calculations (i.e., arithmetic), (5) responsibility for one's own work (vs. submitting it to a superior for checking), and (6) use of particular journals and ledgers.

Percentage of Total Job Duties Devoted to Bookkeeping

The response options to Question 15 were: 25%, 50%, 75%, and 90+%. Findings, by job level, are shown for NYC and for Upstate respondents in Table 42 (next page). As one might anticipate from the hypothesized Jacqueline-of-all-trades nature of small-firm employment largely characteristic of Upstate

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[25]The findings on Question 30 (about time spent in clerical copying) are not reported because responses to it made apparent that the question was ambiguous, not worded so as to make its intent clear to respondents.

respondents, they tended on the average to devote less of their time--in contrast to NYC respondents--to bookkeeping duties (as shown in the "Median" columns of Table 42).

Table 42

Percentage of Total Present-Job Duties Devoted to Bookkeeping Among NYC and Upstate Respondents, by Job Level

(In Percentages)*

Job Level	New York City						Upstate					
	N	Percentage				Median	N	Percentage				Median
		25%	50%	75%	90+%			25%	50%	75%	90+%	
1	118	22.9	20.3	20.3	36.4	75%	5	40.0	60.0	0.0	0.0	---
2	119	8.4	22.7	26.0	42.9	75%	2	0.0	0.0	50.0	50.0	---
3	199	6.0	12.1	23.1	58.8	90+%	20	15.0	20.0	50.0	15.0	75%
4	112	3.6	8.0	20.5	67.9	90+%	26	3.8	7.7	30.8	57.7	90+%
5	33	12.1	6.1	18.2	63.6	90+%	4	25.0	0.0	25.0	50.0	---
6	16	6.2	18.8	12.5	62.5	90+%	2	0.0	50.0	0.0	50.0	---
All	597	9.7	14.9	22.1	53.3	90+%	59	11.9	17.0	33.9	37.3	75%

*To illustrate the reading of the table: 22.9 percent of the 118 NYC employees at job-level 1 reported spending 25 percent of their time directly at bookkeeping duties. Also, the typical level-1 job holder in New York City devoted 75 percent of his time to bookkeeping duties. The last row of the table shows, for example, that more than half the NYC respondents (53.3%) spent at least 90 percent of their time at bookkeeping--in contrast to three-eighths (37.3%) of Upstate respondents. The other entries are read in the same way.

Besides the more frequent involvement solely in bookkeeping duties of the New York City respondents than of the Upstate respondents (as illustrated in the footnote to Table 42), it is also evident that the higher the job level, the larger the proportion solely in bookkeeping/accounting duties. It is the lower-level clerks and accounting clerks who tend to spend, on the average, one-fourth of their time on nonbookkeeping activities. That outcome is in accord with common-sense expectations and has no particular suggestiveness for high school instruction other than the desirability of informing students that their first jobs are quite likely to involve them in at least some duties outside bookkeeping; e.g., filing, typing, etc.

Use of the Typewriter and Other Business Machines

The U.S. Department of Labor, in its Occupational Outlook Handbooks, regularly mentions that for bookkeeping workers "Training which includes typewriting and the use of office machines is often helpful . . ." (p. 285 of the 1972-73 edition of the Handbook). For that reason--and especially to secure information on the extent and type of involvement with various office machines--a subsection of the questionnaire (Questions 24-26) was devoted to the issue: Hours per week at the typewriter (Question 24), nature of typing activities (Question 25), and other machines and hours per week spent at them (Question 26).

Hours Per Week at the Typewriter. As shown in Table 43, three-fifths of the NYC respondents and four-fifths of the Upstate respondents type on the job. Among those who do type, median hours per week among NYC respondents is 3; among Upstate respondents, 4½. Assuming a work week of 35 or 37½ or 40 hours, the typical respondent who types spends from 7.5 to 12.9 percent of his work week at the typewriter.

Table 43

Hours Per Week of Typing Among NYC and Upstate Respondents

Hours per Week	New York City			Upstate		
	N	%	Cum. % (of 363)	N	%	Cum. % (of 48)
1	93	15.6	25.6	10	16.9	20.8
2-3	92	15.4	51.0	10	16.9	41.7
4-5	48	8.0	64.2	8	13.6	58.3
6-10	72	12.1	84.0	8	13.6	75.0
11-15	24	4.0	90.6	3	5.1	81.2
16+	34	5.7	100.0	9	15.3	100.0
All who type	363	60.8		48	81.4	
No typing	234	39.2		11	18.6	
All persons	597	100.0		59	100.0	

Concerning the Upstate data of Table 43, it should be remembered that two of every seven such respondents hold "mixed" positions, some of them under the title "typist/bookkeeper" and the like.

The question of moment for high school instruction is the involvement in typing among the holders of jobs open to beginners; secondarily, the involvement in typing at the various levels of job responsibility might be of some interest. Table 44 displays the findings, by job level, for New York City respondents. Upstate data are not shown because so many held "mixed" positions under titles that include typing; among Upstate respondents, involvement in typing is greater than is shown for NYC respondents in Table 44.

Table 44

Hours Per Week of Typing Among NYC Respondents, By Job Level

Job Level	N	Percent Who Type	Hours per Week		
			Range	Median	Mean*
1	118	56.8	0-16+	1	4.0
2	119	53.8	0-16+	1	3.2
3	199	70.4	0-16+	2	3.8
4	112	66.1	0-10	2-3	3.0
5	33	33.3	0-10	0	.9
6	16	43.8	0-10	0	1.4
All	597	60.8	0-16+	1	3.3

*Both the mean and the median reflect all respondents, including those who do not type; and the mean conservatively takes 16 hours as the midpoint of the interval that begins at 16+.

In the light of the footnote to Table 44, were only those who do type to be considered, the median and mean hours per week of typing for NYC respondents at job levels 1-6, respectively, are: Medians 4.5, 4.5, 3, 3, 3, 2, 3; Means 7.0, 5.9, 5.3, 4.5, 1.3, 2.0. For all the 363 persons who do type, the median hours per week is 3 and the mean is 5.5.

Summarizing the data: (1) The holder of an entry-level job (clerk or accounting clerk, Levels 1-2) is more likely than not to type on the job; if so, typically for 4½-7 hours per week. (2) Perhaps surprisingly, assistant bookkeepers and bookkeepers are more often involved in typing than those at lower levels; but, if a bookkeeper, for not more than 10 hours per week. (3) Across all job-responsibility levels, the chances are 3 in 5 that typing will be involved; and, if so, typically for 3-5½ hours per week.

Nature of Typing Duties. Question 25 asked for typical hours per week spent typing each of four specified kinds of tasks, plus "Other." Too many respondents merely checked the typing tasks they engaged in, without reporting hours, to permit reporting time distributions for each kind of typing task. Accordingly, Table 45 shows only task engagement, not time. Again, for the reason mentioned earlier only NYC, not Upstate data, are shown.

Table 45

Typing Activities of NYC Respondents Who Type

(N = 363)

Activity	N	% of 363
Letters	240	66.1
Forms	163	44.9
Reports	96	26.4
Tables	68	18.7
Other	79	21.8

From the data of Table 45 it would seem that the conventional vocational typing curriculum--including, as it does, the various kinds of typing activities engaged in by bookkeeping personnel--adequately serves the bookkeeping student. Nothing special is required; but bookkeeping students in typing classes should be informed of the relevance to their potential future work in the bookkeeping field of the various components of the typing curriculum.

Use of Office Machines Other Than the Typewriter. Question 26 asked for a listing of other machines used on the job and the number of hours per week spent at each. Of the 597 NYC respondents, 583 (97.7%)--and of the 59 Upstate respondents, 56 (94.9%)--reported the use of at least one office machine. For NYC respondents a median of 16½ hours per week and for Upstate respondents a median of 19 hours per week were spent at such machines. In advance of finer details, time at such machines may be summarized as:

	NYC		Upstate	
Hours	N	%	N	%
1-9	173	29.7	20	35.7
10-19	180	30.9	12	21.4
20+	230	39.5	24	42.9
	583	100.1	56	100.0

Finer details are shown in Table 46.

Table 46

Hours Per Week at Machines Other Than the Typewriter
Among NYC and Upstate Respondents

Hours	NYC			Upstate		
	N	%	Cum. % (Read Up)	N	%	Cum. % (Read Up)
1	15	2.6	100.0	2	3.6	100.0
2-3	30	5.1	97.4	3	5.4	96.4
4-5	59	10.1	92.3	3	5.4	91.1
6-7	43	7.4	82.2	3	5.4	85.7
8-9	26	4.5	74.8	9	16.1	80.4
10-14	101	17.3	70.3	7	12.5	64.3
15-19	79	13.6	53.0	5	8.9	51.8
20-24	66	11.3	39.5	4	7.1	42.9
25+	164	28.1	28.1	20	35.7	35.7
All	583	100.0		56	100.1	

To the extent that machine time reported by respondents is reasonably accurate, the extent to which bookkeeping personnel are--to use a phrase others have used--"figures clerks" is manifest in the data of Table 46. As shown in the "Cum. %" columns of Table 46, about two out of five respondents spend more than half of a 40-hour work week (20+ hours) at machines that--as Table 47 (next page) shows--are mostly ones that do arithmetic. More than half of all respondents spend at least 15 hours per week, and average (mean) hours per week (conservatively taking 25 as the midpoint of the interval that begins at 25 hours) are 15.4 for NYC respondents and 15.6 for Upstate respondents. One respondent whose reported typewriter time, other machine time, and percentage of time spent making calculations amounted to a work week reminiscent of the sweatshop era, when queried by telephone about the impossible total, remarked of her other machine/calculation time: "It only seems that way."

In response to Question 26, nine different machines or types of machines were mentioned with sufficient frequency to justify specific mention. These, plus "Others," are listed in Table 47 (next page).

Table 47

Office Machines Other Than the Typewriter
Used by NYC and Upstate Respondents

Machine	NYC		Upstate	
	N	(% of 597)	N	(% of 59)
None	14	2.3	3	5.1
Adding	474	79.4	47	79.7
Calculator	215	36.0	15	25.4
Checkwriter	128	21.4	17	28.8
Duplicating/Copying	80	13.4	9	15.3
Bookkeeping or Billing	79	13.2	9	15.3
Comptometer	28	4.7	1	1.7
Cash register	17	2.8	15	25.4
Keypunch	15	2.5	0	0.0
Computer	9	1.5	0	0.0
Others	24	4.0	5	8.5

The data of Table 47 are clear enough: adding/calculating machines are the dominant ones; and, as Cook and Maliche (1966) have shown, pre-employment training on such machines is not required by employers. Indeed, among the types of machines listed in Table 47, Cook and Maliche reported that pre-employment training or on-the-job training of more than one day tends to apply only to keypunch and bookkeeping machines. The Comptometer--as both Cook and Maliche and the Labor Department findings given later in this report show--is virtually obsolete. With the exceptions mentioned, high school training on the machines listed in Table 47 is superfluous and therefore not justifiable. A final comment, in passing, bears on the 15 Upstate respondents who use a cash register. Presumably, these are retail store employees who combine bookkeeping with sales clerk and/or cashier duties.

Finally, the number of different office machines other than the typewriter (from 1 to 5+) used by various numbers of respondents is shown in Table 48 (next page). As shown, about five-eighths of Upstate employees and three-fourths of the NYC employees use one or two machines; the remainder, three or more machines.

Table 48

Number of Office Machines Other Than the Typewriter Used by NYC and Upstate Respondents

Number of Different Machines	NYC		Upstate	
	N	%	N	%
0	16	2.7	3	5.1
1	245	41.0	17	28.8
2	215	36.0	20	33.9
3	91	15.2	18	30.5
4	27	4.5	0	0.0
5+	5	.8	1	1.7
Total	597	100.2	59	100.0

Involvement in Electronic Data Processing (EDP) or Services

Among the 597 New York City respondents, 63 percent answered "Yes" to Question 27: "Does your employer use electronic data processing equipment or services (punch cards or computer equipment) to generate bookkeeping and accounting records?" Because only 9 Upstate respondents were involved in EDP, findings are given here only for New York City respondents, applied to Question 28, covering six accounting "areas." First, however, the question of computerization in establishments of various kinds (SICs) and sizes is of interest. Findings by size of firm (total number of employees) are displayed in Table 49.

Table 49

Involvement in Electronic Data Processing By NYC Respondents in Firms of Various Sizes

Size of Firm	Total N	EDP Users	
		N	% of Total
0-3	32	3	9.3
4-9	24	3	12.5
10-99	209	98	46.9
100-499	124	90	72.6
500-999	87	77	88.5
1000+	121	105	86.8
Total	597	376	63.0

Table 49 shows, for example, that 3, or 9.3 percent, of the 32 New York City respondents who are employed in establishments with fewer than 4 employees are involved in nonmanual bookkeeping systems. Mainly, and supporting common expectation, involvement in unit records or computerized systems increases with size of firm: from nearly half in establishments with 10-99 employees, through more than seven-tenths in the 100-499 class, to about seven-eighths in the still larger firms. Computerized and associated systems dominate in the larger firms, and the larger firms account for the bulk of employment (Table 23, p. 48). Curricular implications are given in the account of Labor Department findings later in this report, showing that computerization reduces the need for conceptual knowledge among employees.

Paralleling the data of Table 49, Table 50 displays the findings by type of firm--Standard Industrial Classification.

Table 50

Involvement in Electronic Data Processing Among NYC Respondents, According to Standard Industrial Classification of Employer

Standard Industrial Classification	N	EDP Users	
		N	% of Total
Agriculture, Mining, Contract Construction (SIC 01-17)	15	3	20.0
Manufacturing (SIC 19-39)	121	71	58.7
Transportation (SIC 40-47)	37	29	78.4
Communication and electric, gas, and sanitary services (SIC 48-49)	29	26	89.7
Wholesale and retail trade (SIC 50-59)	134	69	51.5
Banking, other credit agencies, security and commodity brokers, dealers, exchanges and services (SIC 60-62)	57	48	84.2
Insurance and real estate (SIC 63-67)	54	38	70.4
Services (nonprofessional) SIC 70-79)	68	37	54.4
Services (medical and other health) (SIC 80)	44	30	68.2
Services (Other: legal, educational, etc.) (SIC 81-89)	38	25	65.8
Total	597	376	63.0

To an extent, type and size of firm are not independent. As one may infer from Table 50 as well as from the Technical Appendix (pp. 209-221), transportation, communication and public utilities, banks and brokerage houses, hospitals and major insurance carriers tend to be large establishments. In any event, the large establishments are prominently the "paper work" ones, the volume of whose recordmaking requirements have led such extablishments to computerize a portion or much of their operations. The operations that have been computerized in the establishments employing our respondents are displayed in Table 51, based on the total of 376 EDP users.

Table 51

Distribution of Computerized Accounting "Areas" Among NYC Respondents

(N = 376)

Area	N	% of 376
Payroll	293	77.9
Accounts receivable	263	69.9
Accounts payable	228	60.6
Sales	154	41.0
Inventory	143	38.0
Purchases	119	31.6
Others	60	16.0

Here and throughout this presentation of findings on EDP and computerization, the data apply to the field as a whole, not merely to the areas involving our respondents. Questions 27 and 28 inquired about "employer," not employee, involvement in EDP; and Question 28 specifically requested the respondent to "ask your supervisor" if "you are not sure." Especially since the rank ordering of areas in Table 51 is in excellent agreement with Labor Department findings, the data may be taken as indicative of the extent of computerization from one area to another in the accounting field. "Payroll" lends itself most readily to computerization and, as shown, leads the rest. It would seem rather difficult to justify the maintenance of manual payroll records as more than a minor part of high school bookkeeping instruction.

Finally, the breadth of EDP uses across "areas" in the establishments of our respondents is covered in Table 52 (next page).

Table 52

Number of Computerized Accounting "Areas" In the Establishments of NYC Respondents*

Number of Areas	%	Cum. % (Read Up)
1	20.6	100.0
2	14.8	79.4
3	20.8	64.6
4	17.7	43.8
5	8.4	26.1
6	17.7	17.7

*Excluding the "others" of Table 51.

As shown in the middle column of Table 52, one-fifth of the respondents were employed in establishments that had computerized one accounting area. As shown in the last column, about five-eighths (64.6%) had computerized in three or more areas; more than one-fourth had computerized in five or more areas. Among the establishments covered by the Labor Department interviews, some who had not yet begun computerization were planning it; and some who had computerized in some areas were planning extension to other areas. Computerization of accounting records is manifestly a tide that no King Canute can stop--with attendant implications for more modest high school instruction in bookkeeping.

Involvement in Computational Activities

In recognition that some (unknown) proportion of bookkeeping arithmetic is done mentally or by pencil and paper, rather than by machine, Question 29 asked for the percentage of a typical work week devoted to both manual and machine computations (accompanied by examples), with options at 10% intervals from 0% to 90+%. Hours at office machines had been asked in Question 26 and at the typewriter in Question 24. In many dozens of instances (and predicated on a 35- or 37½- or 40-hour work week), the sum of these various activities, as originally reported, exceeded the possible total. In all such instances, respondents were phoned to remedy the inconsistencies, usually with cheerful embarrassment on their part. The arithmetic of bookkeeping, it seems, had for some respondents little transfer value for arithmetic

in other settings. At any rate, excluding the nonrespondents to Question 29 (30 in NYC and 7 Upstate), the NYC and Upstate distributions for percentage of a typical work week spent making calculations are shown in Table 53.

Table 53

Percentage of Work Time Spent Making Calculations

Work Percent	NYC		Upstate	
	%	Cum. %	%	Cum. %
0	1.6	1.6	5.8	5.8
10	12.3	13.9	21.2	26.9
20	13.6	27.5	23.1	50.0
30	18.3	45.8	11.5	61.5
40	9.7	55.5	11.5	73.0
50	14.8	70.4	9.6	82.7
60	8.5	78.8	3.8	86.5
70	7.4	86.2	7.7	94.2
80-90+	13.8	100.0	5.8	100.0

Fewer of the Upstate than of the NYC respondents spend very large amounts of time at calculation because more of the former group have job duties outside bookkeeping. Confining attention, for that reason, to the NYC data of Table 53, the large amount of arithmetic involved in bookkeeping occupations is obvious and explains the routine plea of employers for job applicants who are "good at figures." Although the frequencies underlying the percentages of Table 53 are not shown, the typical (median) NYC respondent devoted 44.4 percent of a typical work week to making calculations--15.5, 16.6 and 17.7 hours, respectively, of a 35-, 37½-, and 40-hour work week. Some 30 percent of NYC respondents spent more than half their time at calculations, and the nearly one out of seven who spent at least 80 percent of their time in that way are "figures clerks" with a vengeance.

On the hypothesis that the lower the level of job responsibility, the more time spent calculating, calculation time was examined in relation to job levels--with outcomes that do not support the hypothesis. Calculation time at job levels 1-4 ranged between 34 and 41 percent; at levels 5 and 6, 48 and 50 percent, respectively (the foregoing percentages are medians).

Responsibility for One's Own Work

Inquiry into whether the respondent was mostly responsible for his own work or, instead, whether it was mostly checked by someone else (Question 31) led to results as displayed in Table 54, by job level, for the 460 NYC employees who responded to the question.

Table 54

Percentage of NYC Respondents Who Have Responsibility for Their Own Work, By Job Level

Job Level	1	2	3	4	5	6	Total
Percent	66.9	78.8	75.9	85.7	81.8	87.5	77.1

The substantial number of nonrespondents to Question 31, added to the variety of possible interpretations of "mostly having responsibility for one's own work," make the particular percentages shown in Table 54 of little interest. The data are displayed merely as a mild confirmation of the commonsense expectation that the higher the level of job responsibility, the less the likelihood of having one's work checked by a superior.

Involvement in Journalizing

As a condensation of the various journalizing activities represented by particular items within the 131 detailed job activities, Question 33 (left side of page 2 of the questionnaire) listed six types of journals and asked the respondent to check the number of money columns in each of the journals that he used. The response options included one representing non-use of the particular journal. In all instances, the responses to Question 33 were checked against the parallel items in the list of 131 job activities that followed. For example, a respondent who indicates that he performs Activity No. 9 ("Do you make entries in a sales journal . . .?") should be able to give (in Question 33) the number of money columns in that journal. In perhaps as many as a hundred instances, there were inconsistencies that had to be cleared up by telephone. Not atypically, one could hear over the telephone a respondent asking a colleague: "Say, how many money columns do we have in our sales [or other] journal?" Examination of the Labor Department findings that were available later largely explained the puzzling inability of many who reported journalizing activity to give the number of money columns: They were using locally designed forms which they either did not rea-

lize were journals or which were, in fact, a portion of a journal. The disagreements in responses were resolved as best as possible by phone--giving the respondent the benefit of the doubt; i.e., crediting him with a Yes for journalizing in uncertain instances. As a result, the involvement in journalizing displayed in Tables 55 and 56 (for NYC respondents) is probably somewhat overestimated. Although no wording of the titles of Tables 55 and 56 could be found that made the difference in their data immediately clear (see, therefore, the illustrative footnotes), the intent of Table 55 is to show what percentage of persons at each of the six job levels use each of the various journals; the intent of Table 56 is to show what percentage of those who do use each of various journals are at the various job levels. The underlying curricular questions are: What is the rank order of frequency of use of the various journals? and Are there journals characteristically handled by holders of higher-level, rather than entry-level, jobs?

Table 55

Percentage of NYC Respondents at Each Job Level
Who Use Each of Various Journals[a]

Journal	Job Level						Mixed[b]	Total	
	1	2	3	4	5	6		%	N
General	9.7	23.4	36.9	78.1	81.2	93.8	51.5	41.2	246
Sales	6.2	16.2	47.1	62.9	34.4	37.5	54.5	35.3	211
Purchases	3.5	9.0	35.3	61.9	2.2	31.2	39.4	28.8	170
Cash Receipts	13.3	25.2	74.3	88.6	53.1	75.0	63.6	52.8	315
Cash Payments	1.8	21.6	65.2	57.2	56.2	81.2	63.6	48.6	290
Combination Cash Rec. and Pay.	1.8	10.8	30.5	34.4	25.0	25.0	27.3	21.4	128
N	113	111	187	105	32	16	33		597

[a]The first of the percentage columns shows that 9.7% of the 113 Level-1 respondents make entries in a General Journal. The Total columns at the right of the table show, for example, that 246, or 41.2% of the 597 NYC respondents make entries in the General Journal.

[b]These persons are not full-time bookkeepers, but instead combine other duties with bookkeeping/accounting.

If the various journals are rank-ordered according to the "Total %" column, the Cash Receipts journal is most commonly used, followed in turn by: Cash Payments, General, Sales, Purchases, and Combination Cash Receipts and Payments. This is not to say that that rank order applies across the field of accounting for private employers. Rather, it is applicable to the work of persons responding to an inquiry addressed to entry-level persons that happened to attract responses from numbers of higher-level persons. For example, in possible explanation of the failure of the General Journal to rank first, phone conversations with respondents with discrepant responses often elicited the comment that the General Journal was maintained by a senior person or by an outside accountant on a monthly basis. In other instances, the difficulties were ones of terminology (e.g., to a telephoned question, a respondent answered, "Oh, we call it a Disbursements Journal." The titles of Question 33 should have incorporated the terms Expense, Disbursements, et al.

The issue of the relation between job level and journalizing is subject to some circularity in the data. The criteria for job-level assignments (as given in Table 1, p. 19) make journalizing a principal hallmark of the assistant bookkeeper and bookkeeper (as distinguished from the Levels 1-2 clerks and accounting clerks). Thus, the larger percentages of journalizing for upper-level than lower-level employees shown in Table 55 reflect the assignment to upper levels of those who journalize. In a phrase, the job-level assignments epitomize and represent by one number on a 6-step scale the details of each person's job duties. The distinction is that the maintenance of <u>one</u> special journal earns a Level 1 or 2 assignment; of more than one, a higher-level assignment. Reflecting, then, the criteria for job-level assignments, journalizing is relatively infrequently carried out by entry-level persons. None of the percentages for journalizing at Levels 1 and 2 shown in Table 55 exceed 25. Also notable is the extent to which maintaining the General Journal is the task of the full bookkeeper, junior accountant or accountant (Levels 4-6). The implications for high school bookkeeping instruction are more or less evident and will be suggested following the display of Table 56 (next page).

In contrast to Table 55, Table 56 shows, for example, that of the 246 respondents who make entries in a General Journal, 4.5 percent are Level-1 persons; of the 315 persons involved with a Cash Receipts Journal, 44.1 percent are assistant bookkeepers (Level 3).

Table 56

Job Levels of NYC Respondents Who Make Journal Entries

(In Percentages)[a]

Job Level	Journal					
	General	Sales	Purchases	Cash Receipts	Cash Payments	Combin. Rec. & Pay.
1	4.5	3.3	2.4	4.8	.7	1.6
2	10.6	8.5	5.9	8.9	8.3	9.4
3	28.0	41.7	38.9	44.1	42.1	44.5
4	33.3	31.3	38.2	29.5	31.0	28.1
5	10.6	5.2	4.1	5.4	6.2	6.3
6	6.1	2.8	2.9	3.8	4.5	3.1
Mixed	6.9	7.1	7.6	6.7	7.2	7.0
Total	100.0	99.9	100.0	100.0	100.0	100.0
N	246	211	170	315	290	128

[a]The reading of this table is illustrated in the last paragraph on p. 95.

Table 56 shows that journalizing is predominantly the province of the assistant bookkeeper and bookkeeper, not of the clerk or accounting clerk. Taken together with the information in Table 55, the data suggest that--

> High school instruction should focus on the more common special journals, primarily the income and expense journals, and make only passing reference to the General Journal--because few entry-level persons are given General Journal responsibilities.

Upstate Journalizing Activity. Tables 57 and 58 (pp. 97-98) contain the Upstate findings, paralleling those for NYC respondents shown in Tables 55-56. Despite the very small numbers of persons at job levels 1 and 2 and at levels 5-6, there is little to choose between the trends (and therefore the implications) of the NYC and Upstate data. For both groups of respondents, journalizing is mainly done by persons at Levels 3 and 4 (assistant bookkeepers and bookkeepers). In fact (Table 58), since 3.1 or 3.2 percent of 32 or 31 persons is 1 person, there are only three instances of any kind of journalizing among the clerks and accounting clerks--confined to two special journals (Sales and Cash Receipts); no beginner handles the General Journal.

Table 57

Percentage of Upstate Respondents at Each Job Level Who Use Each of Various Journals[a]

Journal	Job Level						Total	
	1	2	3	4	5	6	%	N
General	0.0	0.0	35.0	80.8	75.0	50.0	54.2	32
Sales	20.0	50.0	40.0	69.2	50.0	50.0	52.5	31
Purchases	0.0	0.0	10.0	53.8	50.0	0.0	30.5	18
Cash Receipts	20.0	0.0	45.0	76.9	50.0	0.0	54.2	32
Cash Payments	0.0	0.0	35.0	69.2	50.0	0.0	45.8	27
Combination Cash Rec. & Pay.	0.0	50.0	25.0	38.5	50.0	0.0	30.5	18
N	5	2	20	26	4	2		59

[a]The holders of "mixed" positions are shown for the job levels that apply to their bookkeeping/accounting duties, rather than separately. The data of the table are read in the manner illustrated by footnote a of Table 55.

One distinction between the NYC data of Table 55 and the Upstate data of Table 57 consists of several small changes in the rank order of use of the six journals listed. Upstate (as shown in the "Total %" column), the General and Cash Receipts Journals are tied for first rank, and the Cash Payments Journal ranks fourth. A clearer index of NYC/Upstate differences in journal usage--which is to say between the types of journals maintained in establishments ranging up through very large versus ones that are presumably mostly very small—is provided below, in which the "Total %" data of Tables 55 and 57 are rounded to the nearest whole percentage. The journals, abbreviated, are shown in the order of the listings of Tables 55 and 57.

	G	S	P	CR	CP	Comb.
NYC	41	35	29	53	49	21
Upstate	54	52	30	54	46	30

In the smaller Upstate establishments, there appears to be more frequent use of the General, Sales, and Combination Cash Receipts and Payments Journals. However, size of firm is not the only explanatory factor. As shown in Table 89 (p. 217, Technical Appendix), nearly half (28 of 59) Upstate

respondents were employed in establishments engaged in SIC 50-59 (Wholesale and Retail Trade), probably almost entirely in retail trade. In contrast, among NYC respondents (Table 90, p. 218, Technical Appendix) 24 percent of the establishments and 22 percent of the respondents were associated with the category "Wholesale and Retail Trade," including many wholesalers. Perhaps the data contrasting NYC with Upstate journal usage suggest that, in the smaller establishments, the General Journal is more common and a variety of special journals somewhat less common--than in larger establishments. If so, perhaps--

> High school bookkeeping instruction in the smaller cities might give somewhat more attention to the General Journal than seems justified in the large urban areas.

Table 58 displays the Upstate findings paralleling those in Table 56 for NYC respondents.

Table 58

Job Levels of Upstate Respondents Who Make Journal Entries (In Percentages)[a]

Job Level	Journal					
	General	Sales	Purchases	Cash Receipts	Cash Payments	Combin. Rec. & Pay.
1	0.0	3.2	0.0	3.1	0.0	0.0
2	0.0	3.2	0.0	0.0	0.0	5.6
3	21.9	25.8	11.1	28.1	25.9	27.8
4	65.6	58.1	77.8	62.5	66.7	55.6
5	9.4	6.5	11.1	6.3	7.4	11.1
6	3.1	3.2	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.1
N	32	31	18	32	27	18

[a]The table is read in the same manner as Table 56 (see the last paragraph on p. 95).

The implications of the data of Table 58 have been discussed on pages 95 and 96 and require no further comment. Considered, next, is the number of money columns in the journals used by the questionnaire respondents (Question 33--left side of page 2 of the questionnaire).

Number of Money Columns in Various Journals. Curricular interest in the number of money columns in journals is in manifest awareness of the variations in accounting usage and of the instructional principle that expresses the importance of matching, in instruction, the (varying) states of affairs that are likely to be found on the job. Subject to the uncertainty of many NYC respondents about number of money columns referred to on page 93 (i.e., uncertainty about whether the forms they used were, indeed, journals), the NYC findings for number of money columns in journals are displayed in Table 59; the Upstate findings, in Table 60. The pertinent questionnaire item (No. 33) provided, one-by-one, for responses to number of money columns from 1 through 11+. However, with the exceptions covered by the last three footnotes of Table 59, the grouping of 3-7 columns reflects relatively low frequencies for the individual columns within the group; the 9+ grouping for 9, 10, and 11+ reflects both the 10-punch limitation on an IBM card and the sufficiency for curricular purposes of the grouping.

Table 59

Percentage Distribution of Number of Money Columns In Various Journals Used by NYC Respondents[a]

Journal	Number of Money Columns					
	1	2	3-7	8	9+	N
General	8.1	24.0	26.8	11.0	30.1	246
Sales	10.4	12.8	39.3	11.4	26.1	211
Purchases	8.2	10.6	26.5[b]	15.3	39.4	170
Cash Receipts	8.6	8.9	34.6[c]	8.6	39.4	315
Cash Payments	7.6	9.3	25.2	10.0	47.9	290
Combination Cash Rec. & Pay.	7.8	10.9	20.0[d]	4.7	51.6	128
All	8.5	12.7	30.0	10.2	38.6	

[a]The table shows, illustratively, that in 8.1% of General Journal usage, that journal has 1 money column. The column totals are across all six of the journals listed; e.g., about one-eighth of the time (12.7%), the journals have 2 money columns.

[b]For 4 columns, the percentage is 15.3.

[c]For 6 columns, the percentage is 11.1.

[d]For 6 columns, the percentage is 10.2.

Without exception, the modal (most frequent) number of money columns in each of the six journals listed in Table 59 is 9+; next most frequent number of money columns, per journal, is: General 2, Sales 2 (with 4 columns nearly as frequent as 2), Purchases 8, Cash Receipts 6, Cash Payments 8, and Combination 2 (with 6 columns nearly as frequent as 2). Prevailingly, then, all the journals most often have many columns; next most often, the General and Sales Journals have few (2); the others continue to have many.

Table 60 displays the money-column information for Upstate respondents.

Table 60

Percentage Distribution of Number of Money Columns In Various Journals Used by Upstate Respondents[a]

Journal	Number of Money Columns					N
	1	2	3-7	8	9+	
General	9.4	18.8	21.9	3.1	46.9	32
Sales	12.9	19.4	32.3	12.9	22.6	31
Purchases	16.7	22.2	27.8	5.6	27.8	18
Cash Receipts	21.9	15.6	31.3	6.3	25.0	32
Cash Payments	25.9	14.8	29.6	3.7	25.9	27
Combination Cash Rec. & Pay.	16.7	27.8	27.8	11.1	16.7	18
All	16.5	19.0	28.5	7.0	29.1	

[a]See footnote a of Table 59.

For the first five of the six journals listed in Table 60, the modal (most frequent) number of money columns is again 9+; for the Combination journal, 2. Next most frequent among Upstate respondents are: General 2, Sales 2, Purchases 2, Cash Receipts 1, Cash Payments 1, Combination 1 and 9+, equally. Prevailingly, then, the Upstate journals (which is to say, the small-firm journals) mostly have many columns; next most often, they have few.

The Labor Department occupational analysts also collected information on number of money columns in journals by direct examination, thus freeing their findings of the uncertainty characterizing some of the data for NYC questionnaire respondents. Their findings (for nonentry and entry positions) are given in Tables 75 and 76 (pp. 143-144), but with percentages computed on

a different base from that of Tables 59 and 60, with different money-column groupings, and across all journals encountered, including many highly specialized ones (e.g., see Figure 7, p.152) not listed in Tables 59 and 60. As best as can be done by way of comparing questionnaire with interview information on number of money columns in journals in view of the noncomparability factors given above, it may, as a preliminary, be stated that the Labor Department found journalizing to be engaged in by 30 percent of the employees, whereas the percentages for NYC respondents to the questionnaire ranged, as shown in Table 55, from 21 to 53 percent. The 6 NYC percentages cannot be averaged for comparison with the Labor Department's 30 percent because of NYC-employee engagement in different numbers of journals (sometimes 1, at other times more than 1).

On the question of number of money columns, the Labor Department percentages of Tables 75 and 76 (pp. 143, 144) have been converted (in Table 61, below) to the same base as the NYC ones and, when possible, the NYC groupings of number of money columns have been converted to the Labor Department groupings.

Table 61

Percentage Distribution of Number of Money Columns in Journals Among NYC Questionnaire Respondents and Labor Department Interviewees

Source	Number of Money Columns							
	1	2	3-5	6-8	6-10	9+	11+	Unknown
NYC Questionnaire	8.5	12.7	17.4	22.8		38.6		
Labor Department	*	29.6	35.2		9.9		14.1	11.3

*Not reported.

Table 61 shows very poor agreement between the Questionnaire and Labor Department findings on number of money columns in journals: the latter showing a preponderance of 2-5 columns; the former, a preponderance of 6 or more columns. In view of the many omitted questionnaire responses to Question 33 and the characteristic uncertainty of respondents during a telephone check on the discrepancies, one is tempted to place greater credence in the Labor Department findings on number of money columns in journals. However, insofar as the curricular question could be more simply answered were there to be some prevalent number of columns per journal, the question has no simple

answer--except that of variability. It would be well to provide in bookkeeping instruction journal forms that vary widely in number of columns.

Involvement in Maintaining Ledgers

The final "overview" area before considering the 131 detailed job activities concerns whether or not respondents post to the General Ledger (Question 34), to one or more subsidiary ledgers (Question 35), and if "yes" to the latter, which subsidiary ledgers (Question 36). Here again, as with the discrepant or inconsistent responses for journalizing, a certain amount of telephone remedying of inconsistencies had to be undertaken. As a convenient means of examining ledger involvement in relation to total job experience (whether or not post-high school bookkeeping/accounting courses may have been taken), involvement in General Ledger work is shown in Table 62 for those who were graduated from high school pre- and post-1970.

Table 62

General Ledger Work Among Pre- and Post-1970 High School Graduates

HS Graduation Status	Yes		No		Total	
	N	%[a]	N	%[a]	N	%[b]
New York City						
By 1969	207	38.8	326	61.2	533	89.3
1970-72	7	22.6	24	77.4	31	5.2
Non-Grads.	5	15.2	28	84.8	33	5.5
Total	219	36.7	378	63.3	597	100.0
Upstate						
By 1969	33	66.0	17	81.0	50	84.7
1970-72	2	50.0	2	50.0	4	6.8
Non-Grads.	3	60.0	2	40.0	5	8.5
Total	38	64.4	21	35.6	59	100.0

[a]Of the row totals; i.e., of 533, 31, . . ., 59.

[b]Of 597 and of 59.

As shown in Table 62, about three-eighths (36.7%) of the NYC respondents, but about five-eighths (64.4%) of the Upstate respondents, reported that they post to the General Ledger. Among Upstate respondents the frequencies for

pre- and post-1970 high school graduation are too small to permit any inferences. Confined, then, to the NYC data for graduates, less than one-fourth of the recent graduates (22.6%), but about three-eighths of the older graduates (38.8%) were involved in General Ledger work; the ratio of those percentages (older to younger graduates) is 1.7 to 1. Working with the General Ledger is prevailingly a task for the more experienced employee.

Paralleling the data for General Ledger work in Table 62, the information on subsidiary ledgers is shown in Table 63.

Table 63

Subsidiary Ledger Work Among Pre- and Post-1970 High School Graduates

HS Graduation Status	Yes		No		Total	
	N	%[a]	N	%[a]	N	%[b]
New York City						
By 1969	209	39.2	324	60.8	533	89.3
1970-72	9	29.0	22	71.0	31	5.2
Non-Grads.	11	33.3	22	66.7	33	5.5
Total	229	38.4	368	61.6	597	100.0
Upstate						
By 1969	17	34.0	33	66.0	50	84.7
1970-72	1	25.0	3	75.0	4	6.8
Non-Grads.	1	20.0	4	80.0	5	8.5
Total	19	32.2	50	67.8	59	100.0

[a]Of the row totals; i.e., of 533, 31, . . ., 59.

[b]Of 597 and of 59.

The findings of Table 63 on posting to subsidiary ledgers are so very like those of Table 62 applying to the General Ledger that there is little that need be added to the earlier comments. The older graduates are about equally engaged in the General and subsidiary ledgers; the younger ones, slightly more often with subsidiary ledgers than with the General Ledger.

So many dozens of highly specialized subsidiary ledgers were reported in response to Question 36 ("... which subsidiary ledgers?") as to make their mention of little curricular relevance. Instead, the data were tallied for

number of subsidiary ledgers to which the respondent posted, with results as shown in Table 64.

Table 64

Number of Subsidiary Ledgers Maintained

(In Percentages)*

Number	NYC	Upstate
1	40.6	31.6
2	30.1	36.8
3	11.4	21.1
4	9.6	5.3
5+	8.3	5.3
Total	100.0	100.1

*Based on Ns of 229 for NYC and 19 for Upstate respondents.

The data of Table 64 suggest that a bookkeeper whose duties involve subsidiary ledgers will more likely than not be involved with more than one such ledger.

The close agreement between the reported General Ledger and subsidiary ledger work (Tables 62 and 63) might perhaps be suspected, even if only on the grounds that--with one General Ledger vs. (potentially) many subsidiary ledgers--there ought to be more persons involved with the latter ledgers. In the present instance, playing detective is not possible because so many of the questionnaire respondents were experienced persons, not beginners. The Labor Department findings are more pertinent to the issue of ledger involvement because of the precise distinction between entry and nonentry job holders. As shown in Tables 75 and 76 (pp. 143, 144) 11 of 24 nonentry job holders (45.8%) and 42 of 213 holders of entry jobs (19.7%) were engaged in ledger work of one kind or another--without distinguishing the General from subsidiary ledgers. It may also be mentioned (Row 4 of Tables 75 and 76) that 29.1 percent of nonentry-job holders and 14.6 percent of entry-job holders "reconcile subsidiary ledgers with general ledger accounts."

In summary, taking the Labor Department findings as less ambiguous on the issue of ledger work among beginners, only about one-fifth of such persons are engaged in ledger work.

Summary and Implications of Job-Overview Findings

The findings and their implications summarized here are largely, but not entirely, confined to those that have implications for high school bookkeeping instruction. In each instance, the particular page and table numbers containing the details are shown in square brackets.

Typewriting [pp. 83-85, Tables 43-45]. About three-fifths of the NYC respondents and about four-fifths of the Upstate respondents type on the job--the former, typically for 3-5½ hours per week; the latter, for rather more than that because small-firm employees often have duties aside from bookkeeping. The kinds of things bookkeepers type are indistinguishable from the activities commonly included in standard typewriting instruction.

> The high school bookkeeping student is well advised to learn to type--the same sorts of things that are taught to potential other office employees.

Other Office Machines [pp. 85-88, Tables 46-48]. More than 19 of every 20 employees use office machines other than the typewriter--prevailingly adding/calculating machines and, more often than not, more than one machine--typically spending 15-16 hours per week at such machines. Both earlier studies and the Labor Department findings of the present investigation show that no prior school training on any of these machines is desired except for keypunch and bookkeeping machines.

> There is no justification for adding/calculating machine training in the high schools.

Electronic Data Processing [pp. 88-91, Tables 49-52]. Employee involvement in computerized or other electronic bookkeeping/accounting systems ranges from about one-tenth in establishments with fewer than 10 employees to more than seven-eighths in the giant firms. "Payroll" is the area most commonly computerized (more than three-fourths of the instances), with "Accounts Receivable" and "Accounts Payable" at 70 and 60 percent levels, respectively. Among 6 areas (the foregoing, plus Sales, Inventory, and Purases), 3 is the typical number subject to EDP. Labor Department data, however, show a steadily increasing trend toward computerization of accounting records and uniformly-unique-to-the-establishment record forms that substantially reduce the need for conceptual knowledge.

> Except in small-city instruction there is no justification for more than nominal attention to manual payroll records. In big-city instruction a general reduction in the focus on conceptual knowledge seems indicated.

Computation Time [pp. 91-92, Table 53]. The typical bookkeeping employee spends about 44 percent of a typical work week (15½-17½ hours) performing calculations (by machine, by paper and pencil, mentally). Perhaps surprisingly, the more responsible the job, the greater the number of hours and proportion of a work week spent calculating. These findings have no particular instructional implications, but they do strongly validate the "Good at figures" stress placed by employers on job applicants.

Responsibility for One's Own Work [p. 93, Table 54]. Subject to the various possible interpretations of "responsibility" among respondents, more than three-fourths of them reported that they did not mostly have to submit their work for checking by someone else. Increase in self-responsibility is evident with increase in level of job responsibility (from two-thirds of the clerks to seven-eighths of the accountants). To the extent that the respondents' reports on this issue are reliable--

> High school bookkeeping students should understand that on the job--in contrast to in the classroom--there will usually not be someone in a teacherlike role to check the employee's work.

Journalizing Activity [pp. 93-102, Tables 55-61]. Here, there are substantial differences between Questionnaire and Labor Department findings--with Labor Department findings deserving of more credence because they are free of the many inconsistencies in questionnaire responses concerning journalizing and considered of more pertinence because of the unambiguous distinction between entry-level and higher-level employees. Among 213 holders of entry-level positions, 30 percent were found by the Labor Department occupational analysts to be involved in journalizing. Among questionnaire respondents, the incidence of use (in parentheses) of six specified journals was: Cash receipts (53%), Cash payments (49%), General (41%), Sales (35%), Purchases (29%), and Combination cash receipts and payments (21%)--among NYC (i.e., mainly large-firm) employees. Among the smaller-firm employees Upstate, involvement in journalizing tended to be somewhat more frequent, especially for the Sales Journal and the General Journal. Both in New York City and Upstate, journalizing was infrequent (about 10 percent) among holders of lower-level jobs; journalizing is markedly the province of the assistant bookkeeper and bookkeeper--the General Journal, more often of the latter than the former person. Number of money columns in the various journals ranges widely for each journal, with little agreement between Questionnaire

and Labor Department findings in that regard. Especially in view of the large variety of unique-to-the-establishment, highly specialized journal forms discovered by the Labor Department occupational analysts, it would appear that--

> Big-city high school instruction in bookkeeping should give particular focus to the special journals--deliberately varying in number of money columns--with lighter attention to the General Journal. In small-city instruction, somewhat more attention to the General Journal seems justified.

Ledger Activity [pp. 102-104, Tables 62-64]. Although to a lesser extent than was true of journalizing, there were inconsistencies in questionnaire responses on ledger work. Combined with the sharper distinction between entry-level and higher-level jobs provided by the Labor Department findings, those findings appear to deserve the greater credence. Among holders of entry-level positions, the Labor Department found 20 percent to be involved in ledger work (with 15 percent of such persons responsible for reconciling subsidiary ledgers with General Ledger accounts). Among questionnaire respondents, about three-eighths of NYC employees (including one-fifth of low-level job holders) made entries in the General Ledger, as did about five-eighths of the small-firm, Upstate respondents. Subsidiary ledger work was engaged in by about three-eighths of the New York City employees (including about three-tenths of the lower-level job holders) and by about three-tenths of the Upstate respondents. In all, the bookkeeping employee is more likely than not to be involved with more than one ledger. Finally, as with the journal forms, so with the ledger forms analyzed by the Labor Department investigators: they vary in design from one establishment to the next, including variation in number of money columns. Although rather more mildly, the instructional implications for ledger work parallel those for journalizing:

> In the big cities, particular focus on subsidiary ledgers, widely varying in design of the ledger forms, seems desirable--with relatively lighter attention to the General Ledger. For small-city instruction, the General Ledger appears to be clearly more important than subsidiary ledgers.

Throughout this 3-page summary of "job overview" matters, the Labor Department criterion for defining an entry-level job is totally free of ambiguity: one for which employers require no previous job experience.

Considered, next, are the fine details of questionnaire respondents' work.

Details of Present Job Activities

The 131 detailed job activities that begin on the right side of page 2 of the questionnaire are organized into thirteen lettered subsections (A-M) representing topical areas of work. For each of the 131 tasks the respondent was asked to check whether or not he performed the task and, if so, whether he had learned to perform it in school, on the job, or both. Before presenting the task-by-task findings (according to job-relevant school background), a bird's eye view of the scope or breadth of job activity across the 13 areas and 131 tasks is provided. In all instances, only New York City data are shown--because (a) the Upstate findings differ only negligibly from NYC data and (b) Upstate frequencies at all job levels except 3 and 4 (assistant bookkeeper and bookkeeper) were so small (3, 2, 3, 2, plus 17 "mixed" positions) that no useful information on entry-level positions was generated.

Number of Areas and Tasks Engaged In. As one might expect, those at entry levels (1 and 2, clerk and accounting clerk) had narrower job duties than those at higher levels of job responsibility. For those at assistant bookkeeper and bookkeeper levels, the median and modal number of areas (out of thirteen) engaged in was 9 or more (with a "Yes" for an area whenever at least one task in that area was performed). At Level 1 (clerk), the median is 3 and the mode 2; at Level 2 (accounting clerk), the median is 4 and the mode is also 4.

At a more detailed level, the median number of tasks performed (out of 131) is shown, by job level, in Table 65.

Table 65

Median Number of Tasks Performed by NYC Respondents, by Job Level

Job Level	1	2	3	4	5	6	Mixed	All
N	113	111	187	105	32	16	33	597
Median	7	14	27	60	30	50	36	23

In corroboration of much earlier data--and of the Labor Department findings to be presented later--Table 65 shows that the holder of an entry position (Levels 1 and 2) performs relatively few different tasks, in contrast to the numbers performed by holders of higher-level positions. The "Bookkeeper" and the "Senior Accountant" appear to have the largest array of job activities, with the "Assistant Bookkeeper" and "Junior Accountant" at intermediate levels of variety of job duties.

Across all job levels, the percentages (of the 597 NYC respondents) who perform various numbers of tasks (out of 131) are shown in Table 66.

Table 66

Percentage of NYC Respondents
Who Perform Various Numbers of Tasks

Number of Tasks	%	Cum. %
1-9	20.1	20.1
10-19	22.6	42.7
20-29	18.9	61.6
30-39	11.1	72.7
40-49	10.6	83.3
50-59	5.9	89.2
60-69	5.5	94.7
70-79	3.0	97.7
80-89	1.5	99.2
90-99	0.3	99.5
100-117	0.5	100.0

The data of Table 66 are self-explanatory and require no comment.

Preparation for Job Duties by Those with HS Training in Bookkeeping

The data of Table 67 on the following pages are confined to the 196 NYC respondents who had "Only high school training in bookkeeping" and show, for each job activity or duty, the percentage who reported that they learned to perform the activity in school (S), on the job (J), both in school and on the job (B), or who did not specify where they learned to perform the task (U = unspecified). Also shown is N, the number of respondents (out of 196) who reported they performed the activity. Not shown are the 12 job activities not in the high school recordkeeping/bookkeeping curricula (Nos. 28, 36, 47, 62, 63, 64, 96, 98, 99, 126, 127 and 131). No. 94 is also missing because it was inadvertently omitted from the questionnaire.

Evident at a glance in Table 67--despite the inclusion in high school instruction of all the activities listed--are the large percentages for those who reported only on-the-job learning (J), in contrast to the much smaller percentages for school (S) and for both school and job (B) learning The J category exceeds in all instances the sum of the S and the B categories.

Table 67

Number of NYC Respondents with "High School Only" Training Who Perform Each Job Duty and Percentage Distribution of Where They Learned to Perform that Job Duty

[S = School, J = Job, B = Both, U = Unspecified]

Job Activity*	Where Learned				N
	S	J	B	U	
(A) Sales or Services Rendered					
1. Do you decide or help to decide to whom credit should be extended?	7	81	2	10	42
2. Do you keep records of merchandise stock numbers sold or types of services rendered?	0	83	6	11	36
3. Do you list—by salesman, week, territory, or type of service—customers, subscribers, clients or patients?	2	79	6	13	47
4. Do you prepare sales invoices or bills for services?	7	65	18	10	72
5. Do you prepare credit memos?	10	63	19	9	70
6. Do you keep records of sales taxes charged?	2	78	8	12	40
7. Do you calculate for recording on sales invoices or bills, extensions, discounts, allowances, deductibles, taxes or freight charges?	9	60	21	9	85
8. Do you list or total sales invoices, bills or credit memos?	12	59	19	11	94
9. Do you make entries in a sales journal or a journal for services rendered?	15	52	25	8	40
10. Do you make entries in a sales returns and allowances journal?	13	58	19	10	31
11. Do you record C.O.D. sales in a journal?	16	58	11	16	19
12. Do you calculate salesmen's commissions or expenses?	5	84	5	7	44
(B) Cash Receipts					
13. Do you calculate discounts, allowances or partial payments before incoming checks are recorded?	11	64	12	12	73
14. Do you calculate payments or partial payments received as grants or budgetary allocations?	7	64	14	14	28
15. Do you enter incoming checks in a cash receipts journal?	17	49	26	9	90
16. Do you record bank deposits in a cash receipts journal?	20	53	18	9	89
17. Do you start each month's cash receipts journal with a cash balance from the previous month?	21	47	21	12	43
18. Do you total cash receipts records, registers or journals?	16	54	16	13	92
19. Do you make journal entries for cash received on installment sales?	7	64	7	21	14
20. Do you use a cash register?	0	71	14	14	14
21. Do you count cash received or prove correctness of cash on hand with totals in a cash register?	0	81	10	10	21
22. Do you keep records of sales taxes collected?	7	70	13	10	30
23. Do you collect cash from two or more registers and record the totals?	0	86	0	14	7
24. Do you keep records of expenses, purchases or drawing paid for by coins and bills taken from daily receipts?	6	74	6	13	31
25. Do you make entries for discounting notes payable?	10	65	15	10	20
(C) Accounts Receivable					
26. Do you record or post invoices, bills, or credit memos to accounts of customers, subscribers, patients, clients or grantors?	17	56	16	10	81
27. Do you post to accounts, checks or cash received?	22	51	19	9	93
~~28. Do you key off or letter off entries in accounts?~~					

Table 67 (Continued)

Job Activity*	Where Learned				N
	S	J	B	U	
29. Do you find balances in accounts?	20	56	15	9	107
30. Do you prepare statements of accounts?	17	59	13	11	90
31. Do you list or prepare schedules of end-of-month balances of accounts?	13	59	17	11	90
32. Do you age accounts receivable to identify how long they are past due?	9	60	20	11	75
33. Do you keep records of accounts written off as bad debts?	10	71	5	14	58
(D) Purchases or Services Received					
34. Do you prepare purchase orders or requisitions?	0	73	12	15	26
35. Do you compare merchandise or services received with purchase invoices or bills received?	2	78	10	10	60
~~36. Do you code purchase invoices or bills received to indicate the nature of the purchase or service?~~					
37. Do you record purchase quantities on inventory, stock, or open-to-buy records?	0	77	8	15	13
38. Do you compare the total of purchase invoices or expense vouchers with amounts budgeted for them?	0	86	0	14	21
39. Do you prepare credit slips for returned purchases or for errors on purchase invoices?	3	72	8	17	36
40. Do you calculate due date on purchase invoices, vouchers or bills received?	2	14	67	2	51
41. Do you prepare vouchers for purchases or contracted services?	4	67	4	25	24
42. Do you enter purchases or bills for services in a purchases journal or journal for services received?	18	44	18	20	45
43. Do you make entries in a journal that has departmental column headings?	17	60	14	9	35
44. Do you enter vouchers in a voucher register?	0	80	7	13	15
45. Do you make entries in a purchase returns journal?	5	55	20	20	20
(E) Cash Disbursements					
46. Do you prepare stubs and checks for cash disbursements?	19	57	16	8	96
~~47. Do you code checks or stubs by function?~~					
48. Do you enter issued checks in a cash payments journal?	19	49	20	13	70
49. Do you make entries in a check register that is part of a voucher system?	0	69	10	21	29
50. Do you verify correctness of cash journals by comparing balances in journals with balances in checkbook?	15	65	13	8	62
51. Do you make entries relating to operating expenses, such as rent, telephone, electricity, etc?	12	69	7	12	58
52. Do you make entries for proprietor's personal drawings?	6	85	0	9	33
53. Do you reconcile the bank statement balance with the checkbook or cash journal balance?	24	51	17	8	72
54. Do you make entries for bank charges and collection charges?	20	70	3	7	69
55. Do you use a pegboard or other "one write" system for cash receipts or cash payments?	13	87	0	0	15
56. Do you record entries in journals for collection or payment of notes receivable or payable?	3	76	8	14	37
(F) Accounts Payable					
57. Do you post purchase or return amounts in creditors' or vendors' accounts?	25	48	13	13	52
58. Do you post to creditors' accounts the amounts of cash paid to them?	20	56	13	11	61
59. Do you compare statements received from creditors with balances in their accounts?	14	65	9	12	69
60. Do you list or prepare schedules for end of month balances in creditors' accounts?	16	60	11	13	55

Table 67 (Continued)

Job Activity*	Where Learned				N
	S	J	B	U	
(G) Merchandise Records					
61. Do you keep cost records for manufacturing departments?	0	78	0	22	9
~~62. Do you prepare charge slips to subcontractors for merchandise sent to them?~~					
~~63. Do you keep records of merchandise and money received from or due to subcontractors?~~					
~~64. Do you prepare charge slips or credit slips for merchandise shipped to or from branches or subsidiaries?~~					
65. Do you make journal entries for merchandise shipped or received on consignment?	25	50	0	25	8
66. Do you price or total merchandise for physical inventory?	0	85	0	15	13
67. Do you compare physical inventory count with inventory or stock records?	0	80	0	20	10
(H) Petty Cash					
68. Do you prepare petty cash slips or vouchers?	15	62	10	13	61
69. Do you enter petty cash slips or vouchers in a petty cash book or journal?	10	76	4	10	50
70. Do you post directly from the petty cash journal to the general ledger?	9	77	5	9	22
71. Are you responsible for maintaining the petty cash box or drawer?	3	85	0	13	39
(I) Payroll					
72. Do you prepare time cards for employees?	2	85	2	10	48
73. Do you calculate time worked by employees?	4	76	8	12	67
74. Do you calculate gross earnings of employees?	12	73	7	8	60
75. Do you calculate piecework earnings by employees?	6	94	0	0	17
76. Do you calculate payroll deductions for taxes, etc?	9	70	11	11	57
77. Do you enter payroll information in a payroll book or register?	8	69	10	13	61
78. Do you record payroll entries in a cash payments journal?	18	67	7	9	45
79. Do you post directly from the payroll journal to the general ledger?	10	77	3	10	30
80. Do you enter payroll information on individual employees' earnings records?	7	78	5	9	55
81. Do you prepare forms for depositing at the bank of employees' and employer's payroll taxes?	2	86	4	8	49
82. Do you make journal entries for depositing employer's and employees' payroll taxes?	3	86	3	9	35
83. Do you total individual employees' earnings records at the end of each quarter?	4	85	2	9	55
84. Do you prepare quarterly payroll tax reports for federal, state or city governments?	2	84	2	11	45
85. Do you total employees' earnings records for the year?	5	81	2	12	59
86. Do you prepare information for employees' W-2 forms?	3	83	5	10	58
(J) Financial Statements					
87. Do you prepare sales or commercial rent tax returns?	0	82	0	18	17
88. Do you prepare trial balances?	8	56	26	10	39
89. Do you prepare work sheets for balance sheets or income statements?	0	71	17	12	24
90. Do you prepare balance sheets or income statements?	14	59	18	9	22
91. Do you prepare comparative balance sheets or comparative income statements?	0	69	15	15	13

Table 67 (Continued)

Job Activity*	Where Learned				N
	S	J	B	U	
92. Do you prepare income tax or franchise tax returns for your employer?	0	75	0	25	8
93. Do you use financial statements as a basis for preparing current ratios, working capital or merchandising turnover?	0	71	0	29	7
95. Do you calculate the distribution of net profits for a partnership?	0	0	50	50	2
(K) General Ledger and General Journal					
~~96. Do you keep records or accounts for mortgage interest and principal?~~					
97. Do you record entries in the general journal?	16	56	12	16	32
~~98. Do you record entries in the general journal for appropriations granted to your department or fund?~~					
~~99. Do you make entries in the general journal for anticipated revenues for your department or fund?~~					
100. Do you post from the general journal to the general ledger?	18	54	10	18	28
101. Do you record notes receivable or notes payable in the general journal or other journals?	0	74	4	22	23
102. Do you record entries relating to interest income or interest expense?	3	74	7	16	31
103. Do you reconcile accounts receivable or accounts payable with general ledger accounts?	12	60	14	14	58
104. Do you record payroll entries in the general journal?	4	83	4	8	24
105. Do you reconcile payroll records with general ledger accounts?	6	78	6	9	32
106. Do you prepare adjusting entries for bad debts or depreciation?	0	68	8	24	25
107. Do you make adjusting entries for accrued expenses (unpaid salaries, etc.)?	6	75	6	13	16
108. Do you prepare adjusting entries for deferred expenses (unexpired insurance, supplies on hand, etc.)?	0	75	8	17	12
109. Do you make adjusting entries for accrued or deferred income?	0	80	7	13	15
110. Do you make correction entries in journals and ledgers when mistakes are found?	8	72	11	9	64
111. Do you make entries for recovery of bad debts previously written off?	4	77	4	15	27
112. Do you keep drawing and capital accounts for an individual proprietorship or partnership?	0	89	0	11	9
113. Do you make entries for earnings and dividends in capital stock, retained earnings, and other capital accounts?	0	89	11	0	9
114. Do you make entries to close income and expense accounts at the end of the fiscal year?	10	65	15	10	20
115. Do you make, if necessary, reversal entries in the general journal?	7	70	13	10	30
(L) Data Processing					
116. Do you make calculations in connection with entering financial data on coding or input sheets for data processing?	4	80	4	11	45
117. Do you enter financial data on coding/input forms for data processing?	0	82	3	15	34
118. Do you compare data processing coding/input forms with original bookkeeping and business papers?	0	92	0	8	36
119. Do you enter coding information on business papers in preparation for data processing?	0	90	0	10	40
120. Do you compare or balance data processing printouts with original business papers?	0	89	3	8	37

Table 67 (Continued)

Job Activity*	Where Learned				N
	S	J	B	U	
121. Do you enter corrections on coding/input forms for data processing?	0	91	2	7	43
122. Do you enter inventory information on coding forms?	0	83	0	17	12
123. Do you examine data processing records to verify complaints?	0	89	0	11	35
124. Do you examine data processing records to find requested information?	0	90	0	10	50
125. Do you prepare flow charts for data processing systems?	0	75	0	25	4
(M) Miscellaneous					
~~126. Do you keep a register of your organization's encumbrance powers?~~					
~~127. Do you file claims for losses covered by insurance?~~					
128. Do you calculate amounts of interest income or interest expense?	4	70	11	15	27
129. Do you record entries in notes receivable or notes payable registers?	4	79	4	14	28
130. Do you keep a subsidiary ledger or other record for plant, equipment or other fixed assets?	11	89	0	0	9
~~131. Do you keep subsidiary ledgers for individual [illegible] appropriations?~~					
132. Do you make entries in journals that differ from their column headings (double posting, negative entries, etc.)?	15	77	0	8	13

*The deleted activities are those not included in the high school curriculum of New York City.

Upon superficial consideration, the swamping of S-plus-B by J (of school plus school-and-job by job learning alone) would seem astonishing among persons with high school training in recordkeeping/bookkeeping responding to activities included in the high school curriculum. The findings of Table 67 certainly do not mean that the listed activities were not taught in high school or that respondents simply forgot that they had been taught. Instead, the findings suggest that there has been little transfer of the instructional focus on concepts to on-the-job activities. In view of the numerous variations in practices, terminology, and record forms used on the job, the majority of respondents seem not to have recognized that their job activities are merely varied representations of what they had been taught in school. The school "theme" is embedded in classical bookkeeping terminology and record forms; respondents mostly did not recognize their on-the-job activities as variations on that theme--variations in form, but not in substance or concepts. Insofar as school instruction is preparation for work, school instruction should transfer to job performance. Manifestly, teaching for transfer has not been well accomplished in high school bookkeeping instruc-

tion. The purported conceptual focus which is the raison d'etre or justification for high school bookkeeping instruction does not appear to be having its desired effects--at least as measured by recognition of job activities as having been learned (in substance, if not in detail) in school.

Now, the paradigm for maximum positive transfer requires as close as possible a match between school and job activities. The evident slippage revealed by the data of Table 67 clearly lies in the failure in school instruction to deal with the variations in terminology found on the job, to make apparent that the record forms used in school are merely stripped-down abstractions of on-the-job forms that vary widely in details but not in concepts, to include in school training a reasonably representative sample of the kinds of forms used on the job, including those that are portions of a journal or of a ledger account, ones that represent half of a debit/credit concept. The recommendation for school instruction, whose major components have just been mentioned, may be summarized as--

> Insert into high school bookkeeping instruction a wider representation of the varied terminology and record forms found on the job and use those variations to teach for transfer.

Performance of Job Duties According to School Training Status

For each of the 131 job activities, Table 68 shows the percentage of all 597 NYC respondents and of those with various school backgrounds in bookkeeping/accounting who perform the activity.[26] Following Table 68 (page 122) the activities are listed in rank order.

Among those with various school backgrounds [None, HSO (high school only), PHSO (post-high school only), HSP (high school plus post-high school)] the differences in task engagement tend mostly to be rather modest, seldom exceeding about 10 percent--a finding that suggests the greater role of job experience than of school training in determining one's job duties. The exceptions--the larger differences--are those relating to financial statements (Section J, Activities 87-95) and to selected General Ledger and General Journal items (Section K, Activities 96-115). Among them, the influence of post-high school training is apparent.

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[26]The percentages for Items 20, 23, 88, and 110 are suspect: #s 20 and 23 because internal evidence shows "cash register" to have been interpreted by some respondents to mean the piece of hardware rather than the record; #88 for the reasons given on page 45; and #110 because the Labor Department findings suggest its probable misreading to mean mere correcting of errors rather than the formal making of "correction entries."

Table 68

Percentage of NYC Respondents Who Perform Each of 131 Job Activities, According to School Background in Bookkeeping/Accounting

[HSO = high school only, PHSO = post-high school only, HSP = high school plus post-high school; Ns in parentheses]

Job Activity	School Background				Total (597)
	None (166)	HSO (196)	PHSO (117)	HSP (118)	
(A) Sales or Services Rendered					
1. Do you decide or help to decide to whom credit should be extended?	23.5	21.4	19.7	16.9	20.8
2. Do you keep records of merchandise stock numbers sold or types of services rendered?	20.4	18.4	14.5	19.5	18.4
3. Do you list—by salesman, week, territory, or type of service—customers, subscribers, clients or patients?	19.9	24.0	18.8	15.3	20.1
4. Do you prepare sales invoices or bills for services?	31.9	36.7	34.2	33.0	34.2
5. Do you prepare credit memos?	32.5	35.7	37.6	32.2	34.5
6. Do you keep records of sales taxes charged?	25.3	20.4	23.1	18.6	21.9
7. Do you calculate for recording on sales invoices or bills: extensions, discounts, allowances, deductibles, taxes or freight charges?	42.2	43.4	35.9	40.7	41.0
8. Do you list or total sales invoices, bills or credit memos?	50.0	48.0	39.3	39.0	45.1
9. Do you make entries in a sales journal or a journal for services rendered?	25.3	20.4	35.9	26.3	26.0
10. Do you make entries in a sales returns and allowances journal?	14.5	15.8	19.7	14.4	15.9
11. Do you record C.O.D. sales in a journal?	11.4	9.7	7.7	6.8	9.2
12. Do you calculate salesmen's commissions or expenses?	15.1	22.4	19.7	20.3	19.4
(B) Cash Receipts					
13. Do you calculate discounts, allowances or partial payments before incoming checks are recorded?	33.1	37.2	29.9	22.9	31.8
14. Do you calculate payments or partial payments received as grants or budgetary allocations?	17.5	14.3	21.4	10.2	15.7
15. Do you enter incoming checks in a cash receipts journal?	41.6	45.9	51.3	39.8	44.6
16. Do you record bank deposits in a cash receipts journal?	44.6	45.4	52.1	37.3	44.9
17. Do you start each month's cash receipts journal with a cash balance from the previous month?	30.1	21.9	32.5	24.6	26.8
18. Do you total cash receipts records, registers or journals?	48.2	46.9	58.1	44.1	48.9
19. Do you make journal entries for cash received on installment sales?	12.7	7.1	14.5	15.3	11.7
20. Do you use a cash register?	9.6	7.1	7.7	4.2	7.4
21. Do you count cash received or prove correctness of cash on hand with totals in a cash register?	14.5	10.7	16.2	15.3	13.7
22. Do you keep records of sales taxes collected?	18.1	15.3	18.8	16.9	17.1
23. Do you collect cash from two or more registers and record the totals?	42.2	3.6	6.8	5.1	4.7
24. Do you keep records of expenses, purchases or drawing paid for by coins and bills taken from daily receipts?	16.9	15.8	13.7	11.0	14.7
25. Do you make entries for discounting notes payable?	12.7	10.2	14.5	11.9	12.1

Table 68 (Continued)

Job Activity	School Background				Total (597)
	None (166)	HSO (196)	PHSO (117)	HSP (118)	
(C) Accounts Receivable					
26. Do you record or post invoices, bills, or credit memos to accounts of customers, subscribers, patients, clients or grantors?	46.4	41.3	44.4	33.9	41.9
27. Do you post to accounts, checks or cash received?	49.4	47.4	48.7	45.8	47.9
28. Do you key off or letter off entries in accounts?	39.8	38.3	46.2	33.9	39.4
29. Do you find balances in accounts?	57.8	54.6	59.0	55.1	56.4
30. Do you prepare statements of accounts?	43.4	45.9	45.3	41.5	44.2
31. Do you list or prepare schedules of end-of-month balances of accounts?	46.4	45.9	46.2	47.5	46.4
32. Do you age accounts receivable to identify how long they are past due?	34.9	38.3	36.8	33.9	36.2
33. Do you keep records of accounts written off as bad debts?	31.9	29.6	31.6	31.4	31.0
(D) Purchases or Services Received					
34. Do you prepare purchase orders or requisitions?	15.1	13.3	16.2	20.3	15.7
35. Do you compare merchandise or services received with purchase invoices or bills received?	28.3	30.6	25.6	26.3	28.1
36. Do you code purchase invoices or bills received to indicate the nature of the purchase or service?	20.5	23.0	23.9	23.7	22.6
37. Do you record purchase quantities on inventory, stock, or open-to-buy records?	9.0	6.6	12.8	7.6	8.7
38. Do you compare the total of purchase invoices or expense vouchers with amounts budgeted for them?	10.2	10.7	14.5	7.6	10.7
39. Do you prepare credit slips for returned purchases or for errors on purchase invoices?	16.9	18.4	16.2	15.3	16.9
40. Do you calculate due date on purchase invoices, vouchers or bills received?	16.3	26.0	23.9	15.3	20.8
41. Do you prepare vouchers for purchases or contracted services?	9.0	12.2	14.5	16.9	12.7
42. Do you enter purchases or bills for services in a purchases journal or journal for services received?	24.1	23.0	30.8	17.8	23.8
43. Do you make entries in a journal that has departmental column headings?	21.1	17.9	24.8	21.2	20.8
44. Do you enter vouchers in a voucher register?	9.0	7.7	10.3	18.6	10.7
45. Do you make entries in a purchase returns journal?	7.8	10.2	8.5	9.3	9.0
(E) Cash Disbursements					
46. Do you prepare stubs and checks for cash disbursements?	39.2	49.0	50.4	44.1	45.6
47. Do you code checks or stubs by function?	24.1	26.5	27.4	28.8	26.5
48. Do you enter issued checks in a cash payments journal?	38.0	35.7	45.3	31.4	37.4
49. Do you make entries in a check register that is part of a voucher system?	14.5	14.8	16.2	18.6	15.7
50. Do you verify correctness of cash journals by comparing balances in journals with balances in checkbook?	31.9	31.6	43.6	28.8	33.5
51. Do you make entries relating to operating expenses, such as rent, telephone, electricity, etc?	36.1	29.6	47.9	37.3	36.5
52. Do you make entries for proprietor's personal drawings?	15.7	16.8	23.9	15.3	17.6
53. Do you reconcile the bank statement balance with the checkbook or cash journal balance?	33.7	36.7	48.7	36.4	38.2
54. Do you make entries for bank charges and collection charges?	31.3	35.2	42.7	31.4	34.8
55. Do you use a pegboard or other "one-write" system for cash receipts or cash payments?	6.6	7.7	8.5	4.2	6.9
56. Do you record entries in journals for collection or payment of notes receivable or payable?	22.9	18.9	25.6	22.0	21.9

Table 68 (Continued)

Job Activity	School Background				Total (597)
	None (166)	HSO (196)	PHSO (117)	HSP (118)	
(F) Accounts Payable					
57. Do you post purchase or return amounts in creditors' or vendors' accounts?	24.7	26.5	31.6	23.7	26.5
58. Do you post to creditors' accounts the amounts of cash paid to them?	28.3	31.1	33.3	22.0	29.0
59. Do you compare statements received from creditors with balances in their accounts?	30.1	35.2	43.6	27.1	33.8
60. Do you list or prepare schedules for end-of-month balances in creditors' accounts?	24.7	28.1	33.3	18.6	26.3
(G) Merchandise Records					
61. Do you keep cost records for manufacturing departments?	7.8	4.6	12.8	5.9	7.4
62. Do you prepare charge slips to subcontractors for merchandise sent to them?	3.6	3.1	0.9	0.8	2.3
63. Do you keep records of merchandise and money received from or due to subcontractors?	5.4	6.1	6.0	5.9	5.9
64. Do you prepare charge slips or credit slips for merchandise shipped to or from branches or subsidiaries?	4.8	4.1	6.0	4.2	4.7
65. Do you make journal entries for merchandise shipped or received on consignment?	7.2	4.1	6.8	5.1	5.7
66. Do you price or total merchandise for physical inventory?	9.0	6.6	12.0	8.5	8.7
67. Do you compare physical inventory count with inventory or stock records?	10.8	5.1	12.8	8.5	8.9
(H) Petty Cash					
68. Do you prepare petty cash slips or vouchers?	32.5	31.1	37.6	29.7	32.5
69. Do you enter petty cash slips or vouchers in a petty cash book or journal?	23.5	25.5	29.9	27.1	26.1
70. Do you post directly from the petty cash journal to the general ledger?	15.7	11.2	19.7	18.6	15.6
71. Are you responsible for maintaining the petty cash box or drawer?	20.5	19.9	25.6	17.8	20.8
(I) Payroll					
72. Do you prepare time cards for employees?	22.9	24.5	24.8	16.1	22.4
73. Do you calculate time worked by employees?	30.1	34.2	32.5	25.4	31.0
74. Do you calculate gross earnings of employees?	28.9	30.6	36.8	26.3	30.5
75. Do you calculate piecework earnings by employees?	10.8	8.7	12.8	12.7	10.9
76. Do you calculate payroll deductions for taxes, etc?	27.1	29.1	34.2	25.4	28.8
77. Do you enter payroll information in a payroll book or register?	33.1	31.1	35.0	25.4	31.3
78. Do you record payroll entries in a cash payments journal?	28.3	23.0	29.9	22.0	25.6
79. Do you post directly from the payroll journal to the general ledger?	15.7	15.3	22.2	15.3	16.8
80. Do you enter payroll information on individual employees' earnings records?	30.1	28.1	32.5	21.2	28.1
81. Do you prepare forms for depositing at the bank of employees' and employer's payroll taxes?	27.1	25.0	29.1	22.9	26.0
82. Do you make journal entries for depositing employer's and employees' payroll taxes?	22.3	17.9	25.6	22.0	21.4
83. Do you total individual employees' earnings records at the end of each quarter?	25.9	28.1	33.3	22.9	27.5
84. Do you prepare quarterly payroll tax reports for federal, state or city governments?	21.7	23.0	32.5	22.0	24.3
85. Do you total employees' earnings records for the year?	26.5	30.1	33.3	22.9	28.3
86. Do you prepare information for employees' W-2 forms?	25.3	29.6	31.6	23.7	27.6

Table 68 (Continued)

Job Activity	School Background				Total (597)
	None (166)	HSO (196)	PHSO (117)	HSP (118)	
(J) Financial Statements					
87. Do you prepare sales or commercial rent tax returns?	8.4	8.7	17.1	11.9	10.9
88. Do you prepare trial balances?	16.9	19.9	35.9	33.1	24.8
89. Do you prepare work sheets for balance sheets or income statements?	10.2	12.2	31.6	23.7	17.8
90. Do you prepare balance sheets or income statements?	8.4	11.2	23.9	22.9	15.2
91. Do you prepare comparative balance sheets or comparative income statements?	6.6	6.6	16.2	19.5	11.1
92. Do you prepare income tax or franchise tax returns for your employer?	6.0	4.1	12.0	7.6	6.9
93. Do you use financial statements as a basis for preparing current ratios, working capital or merchandising turnover?	2.4	3.6	11.1	9.3	5.9
95. Do you calculate the distribution of net profits for a partnership?	0	1.0	4.3	4.2	2.0
(K) General Ledger and General Journal					
96. Do you keep records or accounts for mortgage interest and principal?	5.4	7.7	14.5	9.3	8.7
97. Do you record entries in the general journal?	25.3	16.3	43.6	37.3	28.3
98. Do you record entries in the general journal for appropriations granted to your department or fund?	7.8	4.6	10.3	11.0	7.9
99. Do you make entries in the general journal for anticipated revenues for your department or fund?	4.8	3.1	8.5	7.6	5.5
100. Do you post from the general journal to the general ledger?	18.1	14.3	29.9	28.8	21.3
101. Do you record notes receivable or notes payable in the general journal or other journals?	18.1	11.7	17.9	19.5	16.2
102. Do you record entries relating to interest income or interest expense?	16.9	15.8	35.9	27.1	22.3
103. Do you reconcile accounts receivable or accounts payable with general ledger accounts?	31.9	29.6	48.7	41.5	36.3
104. Do you record payroll entries in the general journal?	19.9	12.2	26.5	16.9	18.1
105. Do you reconcile payroll records with general ledger accounts?	19.9	16.3	30.8	26.3	22.1
106. Do you prepare adjusting entries for bad debts or depreciation?	10.8	12.8	22.2	19.5	15.4
107. Do you make adjusting entries for accrued expenses (unpaid salaries, etc.)?	10.8	8.2	23.9	27.1	15.7
108. Do you prepare adjusting entries for deferred expenses (unexpired insurance, supplies on hand, etc.)?	6.6	6.1	22.2	18.6	11.9
109. Do you make adjusting entries for accrued or deferred income?	9.0	7.7	16.2	19.5	12.1
110. Do you make correction entries in journals and ledgers when mistakes are found?	42.8	32.7	59.0	55.9	45.2
111. Do you make entries for recovery of bad debts previously written off?	19.3	13.8	23.9	24.6	19.4
112. Do you keep drawing and capital accounts for an individual proprietorship or partnership?	1.8	4.6	9.4	7.6	5.4
113. Do you make entries for earnings and dividends in capital stock, retained earnings, and other capital accounts?	6.0	4.6	14.5	10.2	8.0
114. Do you make entries to close income and expense accounts at the end of the fiscal year?	9.0	10.2	28.2	22.0	15.7
115. Do you make, if necessary, reversal entries in the general journal?	22.3	15.3	46.2	31.4	26.5

Table 68 (Continued)

Job Activity	School Background				Total (597)
	None (166)	HSO (196)	PHSO (117)	HSP (118)	
(L) Data Processing					
116. Do you make calculations in connection with entering financial data on coding or input sheets for data processing?	19.9	23.0	23.1	28.8	23.3
117. Do you enter financial data on coding/input forms for data processing?	19.9	17.3	18.8	29.7	20.8
118. Do you compare data processing coding/input forms with original bookkeeping and business papers?	20.5	18.4	23.9	31.4	22.6
119. Do you enter coding information on business papers in preparation for data processing?	17.5	20.4	23.9	33.1	22.8
120. Do you compare or balance data processing printouts with original business papers?	19.9	18.9	23.9	33.9	23.1
121. Do you enter corrections on coding/input forms for data processing?	24.1	21.9	24.8	37.3	26.1
122. Do you enter inventory information on coding forms?	9.0	6.1	11.1	10.2	8.7
123. Do you examine data processing records to verify complaints?	20.5	17.9	23.9	25.4	21.3
124. Do you examine data processing records to find requested information?	27.1	25.5	31.6	39.8	30.0
125. Do you prepare flow charts for data processing systems?	1.8	2.0	6.0	5.9	3.5
(M) Miscellaneous					
126. Do you keep a register of your organization's insurance policies?	13.9	13.8	22.2	18.6	16.4
127. Do you file claims for losses covered by insurance?	12.0	20.9	28.2	13.6	18.4
128. Do you calculate amounts of interest income or interest expense?	10.8	13.8	29.1	20.3	17.3
129. Do you record entries in notes receivable or notes payable registers?	13.9	14.3	17.1	16.1	15.1
130. Do you keep a subsidiary ledger or other record for plant, equipment or other fixed assets?	10.8	4.6	12.8	16.1	10.2
131 Do you keep subsidiary ledgers for individual grants or appropriations?	3.6	2.0	5.1	7.6	4.2
132. Do you make entries in journals that differ from their column headings (double posting, negative entries, etc.)?	13.9	6.6	17.9	14.4	12.4

The data of Table 68 provide the basis for a number of inferences and curricular recommendations. As between the "None" and high-school-only respondents, on no activity but the suspect No. 110 (see footnote 26 p. 115) does the difference exceed 10 percent, and that difference favors the "None" over the HSO respondents. That aside, the close correspondence of "None" and HSO job activities supports the earlier inference of greater general ability among the presumed academic majors without job-relevant school training than among high school bookkeeping majors. The job activities of the high school bookkeeping major are learned on the job by the academic major with no formal school training in bookkeeping/accounting.

A second inference was mentioned just preceding Table 68: the most re-

sponsible activities (associated with financial statements and with the General Journal and General Ledger) tend rather more often to be carried out by those with post-high school, job-relevant schooling. Taking a difference of 15 percent as a cutoff point and excluding data processing (Section L), there are 12 activities carried out distinctly more often by those with post-high school training than by high-school-only respondents. In rank order of size of difference (from 30.9% to 15.3%) the activities are: Nos. 115, 97, 110, 102, 89, 103, 107, 114, 108, 88, 100, and 128. Among them, the difference for trial-balance preparation (No. 88) is probably larger than 16 percent--because of the incorrect use of the term trial balance among some respondents (see p. 45). In any event, the 12 activities mentioned become candidates for lighter, rather than deep, treatment in high school instruction. That is--

> Activities that tend to be more characteristic of those with post-high school bookkeeping/accounting training and which, for that reason, might be given light, rather than deep, treatment in high school instruction are those concerning: trial balance, work sheets for balance sheets, General Journal, posting from the General Journal to the General Ledger, interest income and expense, reconciliation of subsidiary with General Ledger accounts, adjusting and correction entries, closing of income and expense accounts, and reversal entries.

Job Activities in Rank Order of Frequency

The more general issue is implicit in the rank ordering of activities according to frequency in Table 69 (next page); instructional priority belongs to the most frequent activities, and the low-frequency activities are candidates for minimal attention or even discarding. Task frequency, however, is not an index of amount of instructional attention; for, no matter how frequent, simple tasks require little instructional time. Consider, for example, the ten most frequent tasks (Nos. 29, 18, 27, 31, 46, 110, 8, 16, 15, 30). The first two (Nos. 29 and 18) are mere arithmetic, as are Nos. 8 and 31. Nos. 30 and 46 are clerical tasks with nominal conceptual content. No. 110, as mentioned earlier, is suspect. Posting to accounts (No. 27) and making cash journal entries (Nos. 16 and 15) remain as ones invoking "bookkeeping" concepts.

In Table 69 the column headings are the percentages of NYC respondents engaged in the activities whose item numbers are listed below--in rank order

from high to low (exact percentages are given in Table 68). Tied items (equal percentages) are accompanied by a side bar, and each item is followed by the letter of its section number in the questionnaire. Reading down each column and then from left to right across columns supplies a rank order for all 131 items from most to least frequent (No. 29 to No. 95).

Table 69

Rank Order of 131 Activities, by Number,
According to Percentage of NYC Respondents Engaged in the Activity*

(Items tied in rank marked with a side rule)

Percent Engaged										
59-55	49-45	44-40	39-35	34-30	29-25	24-20	19-15	14-10	9-5	4-1
29C	18B	16B	28C	5A	58F	88J	12A	24B	11A	23B
	27C	15B	53E	4A	76I	84I	111K	21B	45D	64G
	31C	30C	48E	59F	85I	42D	2A	41D	67G	131M
	46E	26C	51E	50E	97K	116L	127M	132M	37D	125L
	110K	7A	103K	68H	35D	120L	104K	25B	66G	62G
	8A		32C	13B	80I	119L	89J	109K	96K	95J
			54E	77I	86I	36D	52E	108K	122L	
				33C	83I	118L	128M	19B	113K	
				73I	17B	72I	22B	91J	98K	
				74I	47E	102K	39D	75I	20B	
				124L	57F	105K	79I	87J	61G	
					115K	6A	126M	38D	55E	
					60F	56E	101K	44D	92J	
					69H	82I	10A	130M	63G	
					121L	100K	14B		93J	
					9A	123L	34D		65G	
					81I	1A	49E		99K	
					78I	40D	107K		112K	
						43D	114K			
						71H	70H			
						117L	106K			
						3A	90J			
							129M			

*For the reasons given in Footnote 26 (p. 115), the rank-order placements of Activities 20, 23, 88, and 110 are probably of low reliability.

Table 69 shows the wide range of engagement in the various activities--from less than 4 percent to more than 55 percent. Also striking is that only one activity engages more than half the NYC respondents (No. 29). Discernible upon visual scanning of the section letters accompanying each activity number is the preponderance of Sections J and K activities (financial statements and the General Journal and Ledger) at the low-percentage end of the distribution. The relative infrequency of such activities--especially at the lower levels of job responsibility (see Tables 56, 58, 62; pp. 96, 98, 102)--suggests that they be, variously, lightly treated in or discarded from high school bookkeeping instruction in cities in which large employers account for most of the employment.

Table 70 shows the number and percentage of activities engaged in by various percentages of NYC respondents; e.g., 63 of the activities (48% of 131) are engaged in by from 15 to 30 percent of NYC respondents.

Table 70
Distribution of 131 Activities
According to Percentage of Engagement Among NYC Respondents

Percent Engaged	Activities N	Activities Cum.	% of 131	Cum. %
59-55	1	1	.8	.8
49-45	6	7	4.6	5.3
44-40	5	12	3.8	9.2
39-35	7	19	5.3	14.5
34-30	11	30	8.4	22.9
29-25	18	48	13.7	36.6
24-20	22	70	16.8	53.4
19-15	23	93	17.6	71.0
14-10	14	107	10.7	81.7
9-5	18	125	13.7	95.4
4-1	6	131	4.6	100.0

Table 70 shows, for example, that less than one-fourth of the components of the high school curriculum (22.9%) engage as many as 30 percent of NYC respondents. Nonetheless, with the class of exceptions mentioned preceding the table, the diffusion of on-the-job activities across the curriculum demonstrates the need to "touch many bases" in high school bookkeeping instruction.

Activities that Discriminate Entry-Level from Higher-Level Employment

The pertinent earlier studies (see pp. 2-5) report that no employer gives the inexperienced high school graduate any responsible work to do and that little work requiring understanding of concepts unique to bookkeeping is done by beginners. Further, present questionnaire findings already reported show that attainment of more responsible jobs is a joint function of amount of work experience and of post-high school, job-relevant courses, not of high school instruction. Accordingly, and in view of the primary objective of high school instruction as preparation for initial employment, the job activities carried out substantially more often by high-level than by low-level employees become potential candidates for discarding from (or light treatment in) high school bookkeeping instruction.

Our own findings demonstrate that entry-level positions are overwhelmingly at Levels 1 and 2 (clerk and accounting clerk). Therefore, to identify the job activities that discriminate entry-level from higher positions, the percentage of NYC respondents at Levels 1 and 2 (N = 224) who engaged in each of the 131 job activities was compared to the percentage of those at Levels 3-6 (N = 340) similarly engaged (omitting the 33 holders of "mixed" positions); for each activity the difference in percentages was computed.

For the Data Processing activities (Nos. 116-125), all but one (No. 116) were more often carried out by lower-level persons, but with no difference exceeding 7 percent. The other 121 job activities were more often carried out by higher-level persons. In considering the details reported next, reference should be made to the last column of Table 68 (pp. 116-120)--for a difference between two groups cannot be large if total task engagement is modest, as illustrated in Table 68 for some of the highly consequential activities of Sections J and K (Nos. 87-115). Excluding the data processing activities mentioned above, the other activities associated with differences of various sizes in percentage of engagement in the task (Levels 1-2 vs. 3-6) are shown next--with all differences favoring the higher-level respondents. [The percentages underlying the differences are shown for each of the two groups in appendix Table 82, pp. 202-206.]

Difference	Activity Number
-11%	2, 3, 7, 11, 20, 23, 34, 37, 38, 41, 55, 61-67, 75, 92, 93, 95, 96, 98, 99, 112, 113, 130, 131 [29 activities]

Difference	Activity Number
11-19%	1, 4, 5, 8, 12, 14, 19, 21, 24, 25, 39, 40, 44, 45, 49, 72, 87, 91, 107-109, 126-129, 132 [26 activities]
20-29%	6, 9, 10, 13, 22, 32, 33, 35, 36, 43, 47, 52, 56, 68-71, 73, 74, 76, 77, 79, 80, 82, 84, 86, 89, 90, 101, 102, 104-106, 111, 114 [35 activities]
30-39%	17, 26, 29, 30, 42, 57, 58, 60, 78, 81, 83, 85, 88, 97, 100, 115 [16 activities]
40-49%	27, 28, 31, 46, 48, 50, 53, 54, 59, 103, 110 [11 activities]
50-59%	15, 16, 18, 51 [4 activities]

The foregoing display is by no means a sufficient basis for identifying viable curricular components for high school instruction because--as Table 82 (pp. 202-206) shows--there are many activities engaged in by persons at all job levels. With relatively few exceptions everything done by lower-level people is also done by high-level employees; indeed, even the highest-level job holders are not free of even the pettiest clerical activities.

The important activities for present purposes are the ones in which the reverse situation obtains: few low-level but many high-level persons. Information of that kind must be considered side by side with the "difference" data displayed above. For example, the activities engaged in by fewer than 11 percent of Levels 1-2 persons but by more than 25 percent of Levels 3-6 persons are (from appendix Table 82): Nos. 1, 6, 9, 12, 17, 40, 42, 43, 48, 50-54, 56-60, 69, 71, 76, 80-86, 88, 89, 97, 100-102, 104, 105, 111, 115. The cutoff points (less than 11 vs. 25 percent) are merely illustrative; the choice is somewhat arbitrary, and other cutoff points could be used.

One important class of exceptions to a cutoff-point basis for identifying unnecessary curricular components, however, covers those activities that, because they are not daily ones, necessarily engage few people (as in some of the activities of Sections J and K). For example, No. 90 (balance sheet preparation) engages, according to Table 68, only 15 percent of all NYC respondents--comprised (as Table 82, p. 205, shows) of only 1.3 percent of those at Levels 1-2, but of 24.1 percent of those at higher levels. That activity and ones like it are clear candidates for discarding from or light treatment in high school bookkeeping curricula. The desideratum throughout is a curriculum attuned to entry-level employment.

Upstate Findings--Job Activities Among Small Employers

The large number of unresolved contradictions and discrepancies in the Upstate data on the 131 job activities--especially those relating to journal and ledger work--does not justify displaying Upstate findings paralleling those of Tables 66-70. With the important additions prominently specified on page 107 plus, perhaps, treatment of the trial balance, the information given for New York City respondents may be taken to apply, as well, to high school bookkeeping instruction for small-firm employment.

Major Listed Activities and Additions to the List

The last page of the questionnaire concludes with a request for a specification of additional activities not covered in the questionnaire and for the ten listed activities most frequently engaged in. Many respondents did not comply with the latter request, and many of those who did showed Section letters, rather than activity numbers. The last-mentioned outcome is entirely understandable--not only because it is extremely difficult to make a reliable selection of ten from among many activities, but also because one would tend to perceive one's job duties in global terms: e.g., as maintaining a cash receipts journal rather than, separably, as entering incoming checks (Item 15) and as recording bank deposits (Item 16) in that journal. Besides, it is notorious that accurate information about task frequency or task time on each of many detailed activities cannot be secured by questionnaire, but only by direct observation carried out by trained observers. For the various reasons given, accurate information on the highest-frequency tasks could not be secured and is not reported.

The request for details on additional activities (Question 133) was more often complied with, resulting in two classes of activities: nonbookkeeping duties and many dozens of special journals and subsidiary ledgers unique to the particular establishment. There is, it seems, no end to the proliferation of records created by an employer to suit his unique needs--a matter of which bookkeeping students should be made especially aware. The uniqueness of course applies to the particular class of transaction represented by the record, not to the underlying bookkeeping concepts.

Classification of 131 Job Activities in Relation to Bookkeeping Concepts

The many respondents without school training in bookkeeping/accounting, as well as the face content of many of the 131 activities, led the investi-

gator to ask Mr. Elliott, one of the consultants to this investigation, to sort the 131 activities into appropriate categories. The categories are ad hoc inventions for the purpose, rather than standard ones, but they and their associated activities are:

1. Routine clerical operations involving no bookkeeping concepts

   Nos. 2-8, 12, 13, 20-24, 34, 35, 37, 39, 40, 62, 67, 68, 71-75, 116, 117, 122

2. Routine operations involving bookkeeping concepts that can be carried out by a person who is shown what to do, without the need to understand the underlying concepts

   Nos. 9-11, 14, 16-19, 26-31, 33, 45, 51, 52, 54, 55, 57-60, 65, 69, 70, 76, 79, 80, 83, 85, 86, 100, 118, 119, 121, 126, 128

3. Bookkeeping activities requiring understanding of the underlying concepts

   Nos. 15, 25, 44, 49, 50, 56, 61, 78, 82, 88-93, 95, 97-99, 101-115, 129-132

4. Activities based on general and particular understandings of business operations not unique to bookkeeping/accounting

   Nos. 1, 32, 36, 38, 41-43, 46-48, 53, 63, 64, 66, 77, 81, 87, 96, 120, 123-125, 127

The foregoing detailed listing may be summarized as:

Category	No. of Items	% of 131
1	30	22.9
2	39	29.8
3	39	29.8
4	23	17.6
	131	100.1

In Mr. Elliott's judgment, three-tenths of the high school recordkeeping/bookkeeping curriculum require conceptual understandings (Category 3); another three-tenths (Category 2) cover job duties that can be executed without conceptual understanding; the remaining curricular components (Categories 1 and 4) are divided between purely clerical tasks and business information not unique to bookkeeping.

The foregoing outcomes are very much in accord with the volume of questionnaire findings that have been reported and with the curricular inferences that have been drawn. The bulk of high school instruction (components, not necessarily instructional time) does not revolve around building a necessary

understanding of concepts unique to the maintenance of financial records. The large numbers of respondents who had no job-relevant school training whatever and whose job duties cannot be distinguished from those with only high school training in bookkeeping make evident that even the necessary conceptual understandings can be--because they have been--learned on the job. Here, however, the differences in general ability between those presumed academic majors and the youngsters enrolled in a high school bookkeeping curriculum is a pertinent consideration whose possible basis for high school bookkeeping instruction, along with others, will be discussed in the final section of this report.

In the meantime, summarizing the findings and implications of the questionnaire data is deferred until after presentation of the findings of the Labor Department interviews of accounting supervisors in industry (and, when necessary to verify particular details, of the employees working under these supervisors), as well as the results of analysis of the record forms used by employees. The Labor Department data are of such high precision and substantial freedom from ambiguity, and actual job practices differ sufficiently from the suppositions of high school instruction, as to make the interview and record-analysis findings a necessary precursor to summarizing all the information on the activities of personnel employed in recordkeeping/bookkeeping/accounting occupations and drawing curricular inferences therefrom.

Following presentation of the Labor Department findings and in order to give it the prominence it deserves, information on small-firm employment among NYC questionnaire respondents is supplied--supplying correctives to some of the uncertainties that surround Upstate questionnaire findings because numerous discrepancies in Upstate responses were not resolved by telephone follow-up with the respondent. The principal question is one of the extent to which high school bookkeeping curricula might justifiably differ as between large cities and smaller ones.

RESULTS AND DISCUSSION: II. LABOR DEPARTMENT FINDINGS

Summary information about the sources of interview and forms-analysis data was given on page 22 of this report. Additional details are shown in Table 71.

Table 71

Distribution of Job Titles Analyzed, Positions, And Total Employees Among Sixteen Employers

Industry and Employer	No. of Job Titles	No. of Positions	Total Employees*
Banking (Commercial)	12	74	10,000
Banking (Mutual Savings)	1	25	300
Government (New York State Labor Department)	7	31	13,349
Hotel and restaurant	6	22	1,000
Insurance (Brokerage)	2	3	20
Insurance (Hospital and Medical Service Plans)	4	4	600
Manufacturing (Aircraft)	1	4	1,870
Manufacturing (Apparel)	1	1	80
Manufacturing (Paint and Varnish)	3	3	188
Public Utilities (Natural Gas)	3	12	1,100
Publishing (Commercial)	1	1	15
Publishing (Nonprofit)	3	3	500
Retail Trade (Department Store)	12	41	3,000
Retail Trade (Furniture)	1	1	15
Transportation (Petroleum Products, by Water)	1	3	601
Wholesale Trade (Petroleum and Petroleum Products)	5	9	700
Total	63	237	33,338

*Numbers of at least three digits ending in zero are rounded.

Employers were selected to cover the range of industrial classifications and firm size; while job titles focussed on entry positions clearly involving a recordkeeping/bookkeeping/accounting function, with special attention

to computerization. Occupational analysts first prepared a "Staffing Schedule" covering all personnel in the accounting department(s), at whatever level, and then selected particular entry jobs for detailed analysis. A few nonentry jobs were also analyzed (see Table 72 and some of its footnotes).

As a basis for a discussion of details, an overview is provided in Table 72 on the next four pages, covering: (a) employer and job title, plus number of positions (i.e., individuals) under each title, (b) hiring prerequisites (minimum educational level, type of school training, previous job experience), (c) employer-supplied training, (d) involvement in computerization and its effects on the employee's "need to know" bookkeeping concepts--in comparison to the conceptual requirements under earlier manual systems, and (e) level of job responsibility (on the same 6-step scale earlier applied to questionnaire respondents[27]). The job titles shown are sometimes those used by the employer and at other times as amended by the investigators for the sake of greater descriptiveness of job duties. The three "Requirements" columns and the duration of on-the-job training before the employee is considered to have mastered his job represent employers' judgments. Involvement in computerization shows "Yes" whenever any portion of job activities provides input to and/or uses output from a computer and affects the employee's job duties. Accompanying the "Yes" entries and based on the collective judgments of the occupational analysts and the accounting supervisors in the cooperating establishments is an estimate of the effect of computerization on "need to know," shown as: S (same need to know), L (less need to know), or ? (undeterminable). There were no instances of more need to know.

Concerning job responsibility level (last column of Table 72), the Labor Department materials include detailed job descriptions, accompanied by samples of the record forms used by each employee. For that reason judgments of job level could be more accurately estimated than for the questionnaire respondents. However, because the form and language of the questionnaire and interview data differ, application of the job-level criteria could not always be exact. A few Labor Department 1's border Level 2; alternatively, some questionnaire 2's might better have been assigned to Level 1.

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[27]Mr. William F. Walquist, of the Occupational Analysis Field Center, together with the author of this report, examined the detailed job descriptions and accompanying record forms and converted the 3-level code described on pages 23-24 to the 6-level code applied to questionnaire respondents. The original Level I became Levels 1 or 2; Level II's became 2's or 3's; Level III's became Level 3 or higher.

Table 72

Hiring Requirements, Training Practices, Involvement in Computerization, and Job Level Associated with Sixty-Three Job Titles of Sixteen Employers

Employer and Job Title (No. of "Positions")	Requirements			On-the-Job Training	Computerized (Need to Know)[c]	Job Level
	Minimum Education[a]	School Training[b]	Previous Experience			
Bank (Commercial)						
1. Acceptance (Ltr. Cred.) Clk. (1)	HS	Voc. (H)	None	6 mos.	No	1
2. Journal Clerk (2)	HS	Voc. (H)	None	3 mos.	Yes (S)	2
3. Loan Clerk (13)	HS	Voc. (H)	None	1 mo.[d]	Yes (S)	3
4. Mortgage Clerk (5)	HS	None	None	3 mos.	Yes (L)	1
5. Paying and Receiving Teller (17)	HS[e]	None	None	1 wk.[f]	Yes (S)	2
6. Trust (Fiduciary) Accountant (14)	2 C	Acctg.	None	2 yrs.	No	5
7. Pension (Journal) Clerk (2)	HS	None	None	3 mos.	Yes (S)	2
8. Data Processing Clerk (4)	HS	None	None	3 mos.	Yes (S)	1
9. Cash Update Clerk (7)	HS	None	None	3 mos.	Yes (S)	1
10. Securities Ledger Clerk (5)	HS	None	None	3 mos.	Yes (S)	1
11. Cash Reports Clk. (no computing) (3)	HS	None	None	3 mos.	Yes (S)	1
12. Securities Transaction Clerk (1)	HS	Acad. (P)	1 yr.	6 mos.	Yes (S)	3
Bank (Mutual Savings)						
13. Teller (25)	HS	None	None	3 mos.[g]	Yes (S)	2
Government (NY State Labor Dept.)[h]						
14. Sr. Payroll Clerk (Prom.)[i] (1)	2 HS	M/Bk.	1 yr.	2 mos.	Yes (?)	2
15. Ledger Control Clerk (Prom.) (1)	2 HS	M/Bk.	1 yr.	30 da.	Yes (?)	2
16. Sr. Ldg. & Journ. Clk. (Prom.) (4)	HS	M/Bk.	1 yr.	6-12 mos.	Yes (?)	3
17. Data Proc. & Control Clerk (2)	2 HS	None	None	30-90 da.	Yes (?)	1
18. Travel Voucher Clerk (18)	2 HS	None	None	*	Yes (?)	1
19. Equipment Ldg. Bkkpr. (Prom.) (4)	HS	None	1 yr.	*	Yes (?)	3
20. Travel Vouch. Cont. Clk. (Prom.) (1)	2 HS	None	1 yr.	*	Yes (?)	2

Table 72 (Continued)

Employer and Job Title (No. of "Positions")	Requirements			On-the-Job Training	Computerized (Need to Know)[c]	Job Level
	Minimum Education[a]	School Training[b]	Previous Experience			
Hotel (with restaurant)						
21. Restaurant Audit Clerk (5)	Elem.	None	None	6 mos.	No	1
22. Billing Machine Operator (2)	Elem.	None	None	2 mos.	No	1
23. Credit Card Clerk (1)	Elem.	None	None	2 mos.	No	1
24. Commission Clerk (1)	Elem.	None	None	1 mo.	No	1
25. Front Desk Cashier (8)	Elem.	None	None	2 mos.	No	1
26. Night Auditor (5)	Elem.	None	None	6 mos.	No	2
Insurance (Brokerage)						
27. Premium Clerk (2)	Elem.	None	None	3 mos.	No	2
28. Billing Clerk (1)	Elem.	None	None	3 mos.	No	1
Insurance (Hosp. & Med. Svces.)						
29. Figures (Purch. Order) Clerk (1)	HS	None	None	3 mos.	No	1
30. Cash Receipts Journal Clerk (1)	HS	None	None	3 mos.	Yes (S)	2
31. Figures (Premium) Clerk (1)	HS	None	None	3 mos.	Yes (S)	1
32. Figures (Charge) Clerk (1)	HS	None	None	3 mos.	Yes (S)	1
Manufacturer (Aircraft)						
33. Figures (Cost Control) Clerk (4)	HS	Bus.	None	None	Yes (?)	1
Manufacturer (Apparel)						
34. Payroll Clerk (1)	Elem.	None	None	2 mos.	No	1
Manufacturer (Paints and Varnish)						
35. Credit Memo Clerk (1)	HS	Bk. (P)	None	2 mos.	Yes (L)	2
36. Asst. Credit Memo Clerk (1)	HS	Bk. (P)	None	2 mos.	Yes (L)	1
37. Payroll Clerk (1)	HS	Bus.	None	3 mos.	Yes (L)	1

Table 72 (Continued)

Employer and Job Title (No. of "Positions")	Requirements			On-the-Job Training	Computerized (Need to Know)[c]	Job Level
	Minimum Education[a]	School Training[b]	Previous Experience			
Public Utility (Natural Gas)						
38. Sales Order Clerk (3)	2 C (P)	Ac. (P)	None	1 wk.	Yes (L)	1
39. Payment Voucher Clerk (8)	2 C (P)	Ac. (P)	None	6-8 mos.	Yes (L)	2
40. Payroll Clerk (no computing) (1)	2 C (P)	Ac. (P)	None	1 wk.	No	1
Publisher (Commercial)						
41. Cash Rec. & Disburs. Clerk (1)	Elem.	None	None	To 4 mos.	No	1
Publisher (Nonprofit)						
42. Machine Opr. (IBM 2660 & NCR) (1)	HS	Bk.[k]	None	2 wks.[j]	Yes (S)	3
43. Securities Bookkeeper (1)	HS	Bk.[k]	None	2 mos.	Yes (S)	3
44. Accounts Payable Clerk (1)	HS	Bk.	None	2 mos.	No	1
Retail Trade (Department Store)						
45. Asst. Bookkeeper, General (15)	HS	Bk.[l]	None	None	No	3
46. C.O.D. Audit Clerk (3)	HS	Bk. (H)	None	2 da.	No	1
47. Journal Transaction Clerk (1)	HS	Bk. (H)	None	2 da.	No	1
48. Machine Opr. (Burroughs 3200) (2)	HS	Bk. (H)	None	2 da.	No	1
49. Bookkeeper (Ledger & Trial Bal.) (1)	HS	2 Bk.	None	6 mos.	Yes (S)	4
50. Subsidiary Ledger Bookkeeper (2)	HS	2 Bk.	None	6 mos.	Yes (S)	3
51. NCR Operator (6)	HS	2 M/Bk.	1-2 yrs.	3 mos.	No	1
52. Subsidiary Ledg. Cont. Clerk (1)	HS	2 M/Bk. (or)	1-2 yrs.	1 mo.	Yes (S)	2
53. Figures Clerk (2)	HS	2 M/Bk.	None	6 mos.	No	1
54. Machine Oper. (NCR Checkwriter) (1)	HS	2 M/Bk.	None	1 mo.	No	1
55. Payroll Clerk (6)	HS	None	None	3-6 mos.	Yes (S)	2
56. Accounts Reçeivable Bookkeeper (1)	HS	2 Bk.	None	None	Yes (S)	3
Retail Trade (Furniture)						
57. Machine Oper. (A/R & A/P) (1)	Elem.	Bk.	None	To 6 mos.	No	3

Table 72 (Continued)

Employer and Job Title (No. of "Positions")	Requirements			On-the-Job Training	Computerized (Need to Know)[c]	Job Level
	Minimum Education[a]	School Training[b]	Previous Experience			
Transportation (Petroleum)						
58. Accts. Rec. & Pay. Bookkeeper (3)	HS	Bk.	None	6 mos.	Yes (S)	3
Wholesale Trade (Petroleum Prod.)						
59. Shipment Clerk (1)	HS	None	None	1 wk.	No	1
60. Billing Clerk (3)	HS	None	None	1 wk.	No	1
61. Spec. Journ. & Subsid. Ldg. Clk. (2)	HS	None	2 yrs. (P)	1 wk.	Yes (S)	3
62. Special Journal Clerk (1)	HS	None	2 yrs. (P)	1 wk.	Yes (S)	3
63. Cash Receipts Bookkeeper (2)	1 C	Ac.	1-3 yrs.	2 wks.	Yes (S)	3

[a]HS = high school grad.; 2 HS = 2 yrs. high school; 1 C or 2 C = 1 or 2 yrs. college; Elem. = elementary school; (P) = preferred (but not required).

[b]Voc. - vocational; (H) = helpful (but not required); Ac. = accounting; Acad. = academic; Bus. = business; Bk. = bookkeeping (1 yr.); 2 Bk. = 2 yrs. bookkeeping; M/Bk. = math or bookkeeping.

[c](S) = Same, (L) = Less, (?) = Undeterminable.

[d]Preceded by 1-wk. formal course by employer.

[e]Plus passing an arithmetic test.

[f]Preceded by 2-wk. formal course by employer.

[g]Preceded by 3-wk. formal course by employer.

[h]The State civil service jobs cover two official titles: Accounting Clerk and Senior Accounting Clerk. Officially, there are no education, training or experience requirements for the lower title; for the higher title, 1 year of previous State employment is a prerequisite. The details shown for the jobs represent supervisors' judgments, not official requirements.

[i](Prom.) = promotion; i.e., qualified for the Senior Accounting Clerk position on the basis of 1 year of previous State employment.

[j]Preceded by 2-wk. formal course by employer.

[k]Plus 1 college course in Investment Principles.

[l]Plus 2 yrs. business school, including comptometer operation.

[m]Employer estimates 6 mos. "orientation" to become familiar with the company's procedures.

*Information not available.

Of the 63 jobs listed in Table 72, covering 237 positions or individuals, 11 are nonentry jobs (i.e., they require previous experience), covering 24 positions, viz., Job Nos. 12, 14-16, 19, 20, 51, 52, and 61-63. The remaining 52 jobs, covering 213 positions, are entry jobs available to those without previous work experience.

The types of information reflected by the column headings of Table 72 are discussed below, in turn, and some of it is further summarized for convenience of discussion.

Educational Requirements

The details of Table 72 are summarized in Table 73.

Table 73

Percentage Distribution of Educational Requirements
For Entry and Nonentry Jobs and Positions

Minimum Education	Entry		Nonentry		Total	
	Jobs (N=52)	Pos. (N=213)	Jobs (N=11)	Pos. (N=24)	Jobs (N=63)	Pos. (N=237)
Elementary school	21	13	0	0	17	12
2 yrs. high school	4	9	27	12	8	10
High school graduation						
Required	63	51	64	79	63	54
Preferred*	4	14	0	0	3	13
Up to 2 yrs. college						
Required	2	7	9	8	3	7
Preferred	6	6	0	0	5	5
Total	100%	100%	100%	99%	99%	101%

*Job Nos. 3 and 5.

As shown in Table 73, the majority of employers prescribe high school graduation as an employment prerequisite. Some employers, however, (viz., the hotel, the insurance broker, the apparel manufacturer, the commercial publisher and the retail furniture store) consider that no more than elementary school education is adequate for the 11 jobs (see Table 72) listed for them. At the other extreme (for the public utility), the occupational analyst judged that the college requirement was overstated by the employer; nothing in the detailed job description was felt to justify that requirement (or for accounting as a component of that college work). In general,

each employer tends to set the same minimum education level for all his entry-level positions.

Specific Vocational Training

In contrast to employers' standards for educational level, rather more discrimination is evident with regard to the specific components of that schooling, both within establishments and from one employer to another. The details of Table 72 are summarized in Table 74.

Table 74

Percentage Distribution of Special Training Requirements For Entry and Nonentry Jobs and Positions

Special Training	Entry		Nonentry		Total	
	Jobs (N=52)	Pos. (N=213)	Jobs (N=11)	Pos. (N=24)	Jobs (N=63)	Pos. (N=237)
None	52	61	36	33	49	58
Vocational or business training helpful	6	8			5	7
Vocational or business training required	4	2			3	2
Bookkeeping preferred or helpful	10	4			8	3
1 yr. bookkeeping required	12	10			10	9
2 yrs. bookkeeping required	6	2			5	2
2 yrs. math or bookkeeping required	4	1	18	29	6	4
Math or bookkeeping desirable[1]			27	25	5	3
Up to 2 yrs. college accounting required	2	7	9	8	3	7
Up to 2 yrs. college accounting preferred	6	6			5	5
Academic background preferred			9	4	2	*
Total	102%	101%	99%	99%	101%	100%
In-plant or OJT	100%	100%	100%	100%	100%	100%

[1]Opinion of accounting supervisors (Jobs 14-16)--not an official requirement for the position--see Footnote h of Table 72.

*Less than half of 1 percent.

The data of Table 74 have rather important implications for the viability of conventional high school training in bookkeeping. Most striking (first row of Table 74) is that more than half the entry job titles (52%), covering three-fifths of the positions (61%), surveyed by the Field Center's occupational analysts require no previous school training in bookkeeping or closely associated areas. Indeed, for only 11 (21%) of the entry jobs, covering 13 percent of the positions, is bookkeeping (or high school mathematics) required. For another 10 percent of the job titles, covering 4 percent of the positions, bookkeeping training is preferred or helpful, but not required. The "math" entries of Table 74, by the way, only partially reflect the uniform specification by accounting supervisors to the occupational analysts that applicants be "good at figures." In that connection the overwhelming incidence of "computation" as a job activity will be shown later (Tables 75 and 76, pp. 143-144), as will the use of record forms unique to the job and the employer--often bearing little superficial resemblance to the journal, ledger and other forms characteristic of school training in bookkeeping. Taking together the uniqueness of each establishment's operations and record forms, plus the massive computation activity associated with entry jobs, it is easy to understand (last row of Table 74) why in-plant and/or on-the-job training is uniformly provided by employers--either as sufficient unto itself or as a necessary addition to previous formal school training in bookkeeping. Indeed, when prior school training is specified by employers, it may well be more as an indicator of the applicant's motivation for and interest in such work than of possession of particular job knowledges and skills. Finally, the school training information of Table 74 is largely confined to bookkeeping skills, not including such commonly preferred (or required) peripheral skills as typing.

In-Plant and On-the-Job Training

Occasional instances of employer-supplied training in formal courses of 1-3 weeks prior to undertaking actual job duties are footnoted in Table 72--applicable to the highly specialized activities of banking and to a highly sophisticated computerized system (with cathode ray tube display) used by two of the establishments (Job Nos. 42 and 63). In any event, the substantial range of duration of OJT (from a few days through a year)--before it is felt that the employee is "on top of" his job--should probably be taken as an approximate index of job complexity, subject, however, to the varying

notions or standards of adequacy of job performance and of job complexity undoubtedly present among accounting supervisors.

Effects of Computerization on "Need to Know" Bookkeeping Concepts

The many hundreds of locally developed record forms used by the holders of the 63 job titles listed in Table 72 and collected by the occupational analysts range from items as simple as a credit card voucher (representing payment of a guest's hotel bill) to ones with an eye-boggling number of columns or categories and fineness of detail, from ones on which an employee merely copies information from an earlier record to ones requiring substantial judgment, from forms containing such terms as "debits," "credits," "journal," "ledger" that do not require a conceptual understanding of the meaning of those terms to ones with the same terminology that do require a grasp of their meaning. Instantly apparent from the immense variety in the design of these forms and from their specific-to-the-particular-employer content is their lack of visual resemblance to the standard journal and ledger forms used in bookkeeping instruction--so much so that the locally designed forms might not be recognized for what they are by a person with conventional training in bookkeeping until briefed by his supervisor. Indeed, the largest single class of inconsistencies in questionnaire responses that required telephone follow-up was the reporting of specific journalizing or posting activities not accompanied by matching responses to Questions 33-35 on the left side of page 2 of the questionnaire. That is, many respondents did not realize that the forms they used were in fact journals or portions of them, ledgers or portions of them; and they were often puzzled by and unable to respond to the query about "number of money columns."

In any event, judging the effects of computerization on "Need to Know" (in parentheses in the "Computerized?" column of Table 72) could not be precise in all instances, despite the pooled judgments of the occupational analysts in consultation with the accounting supervisors of the employees. At the extremes, of course, judgments were easy to make. For example, the NCR operator (Job No. 51, Table 72) who follows an unvarying routine in preparing expense journal sheets, but whose machine also prepares a punched tape that goes to the computer, has no need for conceptual knowledge to prepare the journal sheets and is wholly unaffected by the punched-tape output. In the same category is the clerk who enters simple data on a multiple-carbon

snap-out form, the last copy of which goes to a keypunch operator. There are also those whole involvement with computerization consists solely of comparing computer printout totals or balances with those on earlier manual forms--essentially a verification-of-arithmetic function. The several instances of purely nominal involvement in computerization are shown as "No" in the "Computerized?" column of Table 72; the "Yes" entries represent a substantive effect of computerization on job duties. In most such instances (24 or 63% of the 38 "Yes" entries), there was judged to be no effect on the "need to know"--the (S) or "Same" level of conceptual knowledge was required as would have been the case had there been no computerization. For 6 (16%) of the 38 Yeses there was judged to be (L) or "Less" need to know. There were no instances of (M) or "More" need to know; and in 8 instances (21%) the effect on need to know was ? (undeterminable).

In connection with the foregoing judgments it is important to understand that they represent change, not amount. That is, there are (S) jobs that require little or no need to know either with or without computerization, as well as ones that require modest or substantial conceptual knowledge under both manual and computerized conditions. Similarly, there are (L) jobs reduced from substantial knowledge, as well as ones reduced from modest conceptual requirements. As thus far discussed, it appears that computerization most often has little effect on whatever "need to know" goes with the bookkeeping activities performed at entry levels.

Because the 16 employers surveyed by the Labor Department were not selected in a fashion that permits characterizing them as a representative sample drawn from a specifiable population of employers, the Labor Department analyses with regard to computerization should be taken as suggestive rather than definitive. That understood, the overall descriptions and characterizations provided by Mr. Walquist in his preliminary draft report of the occupational analysis data are quoted below.

> The jobs surveyed fall into four general categories or stages of technological development: (1) Classical bookkeeping (manual journalizing, posting, and balancing); (2) Machine bookkeeping (classical bookkeeping utilizing bookkeeping machines); (3) Preparation of accounting data (by journalizing and/or coding) for input to electronic computers by keypunch operators and proving or correcting the resulting computer output; and (4) Direct input of accounting data to computer, utilizing on-line peripheral equipment.

> Most of the firms visited use a combination of these methods--all but five make some use of the computer. Two of the five combine manual and machine bookkeeping, while three use manual only. All the others utilize the computer to some degree.
>
> The size of the firm does not necessarily determine the data processing method. An insurance brokerage with 20 employees processes its data through a computer, while a large hotel with 1,000 employees does not.
>
> The accounting departments of all but three of the establishments use more than one of the four bookkeeping methods for different parts of their operations. One of them, a nonprofit publisher and distributor of Bibles, is presently in all four stages of development (manual, machine, indirect computerization via keypunch, and on-line computerization) at once! This is because it takes time to computerize. A department store chain that put its accounts receivable department on electronic data processing six years ago has just finished converting its payroll department, is about to start computerizing accounts payable, does not expect to have its entire accounting operation computerized for another 7 to 10 years, and has no plans at all for computerizing its general ledger.
>
> Computerization has a varied effect on job structure. . . . In general, computerization reduces the posting elements of the work and increases the balancing and checking functions.
>
> Accounting departments are just beginning to nibble around the edges of direct input via on-line devices. With this method, paper-and-pencil coding could be eliminated. Codes and other data can be transmitted directly to the computer by typewriter-style keyboard.

Bearing on the last paragraph quoted above, for a description of what accounting will be like after introduction of the CRT (cathode ray tube) for direct input of accounting data to the electronic computer, selected portions of the Labor Department job analysis for Job No. 63 (not an entry-level job) are shown on appendix pages 222-226: job summary and job definition on page 222, hiring requirements and a description of the display station on page 223, the four major tasks that make up the job on page 224, and discussion of the effects of the computer revolution on accounting practices and hiring requirements on pages 225-226 (whose underscored and side-marked portions highlight the anticipated changes).

School Training vs. OJT. Before reporting some illustrative job descriptions and displaying some illustrative record forms, an important inference may be drawn from the findings discussed thus far. Before doing so, it should be noted that 11 of the 63 jobs listed in Table 72 are not entry-level positions (Nos. 12, 14-16, 19, 20, 51, 52, 61-63) and that 5 others either require or prefer college training (Nos. 6, 38-40, 43). Of the 47 entry-level

positions that do not specify college training, the majority do not specify prior high school training in bookkeeping. One must infer from employers' hiring practices that:

> On-the-job training is adequate for much entry-level employment in bookkeeping; prior high school training in bookkeeping is often not required.

The foregoing inference is a rather gross one; more discrimination and illustrative detail are evident in the practices of the department store (Job Nos. 45-56 in Table 72). Again quoting from Mr. Walquist's preliminary draft report:

> [Job No. 45] requires a commercial high school diploma with one year of bookkeeping courses; the Sales Audit Department asks for high school graduates in any course (with bookkeeping indicated as helpful but not required); the General Accounting Department requires two years of bookkeeping; the Accounts Payable Department wants two years of mathematics or bookkeeping; the Payroll Department will accept any type of high school diploma; and Accounts Receivable demands two years of bookkeeping.

The department store excepted, the actual hiring practices of employers (see the "School Training" column of Table 72) are rather at variance with the armchair opinions of accounting supervisors about employee qualifications. In fact, OJT without prior school training predominates; in opinion, according to Mr. Walquist, basic educational requirements are not altered by innovations such as computerization and, when it applies, bookkeeping theory is as pertinent to computerized as to manual operations. In all instances, "the universal demand is that the worker be good at figures." Again from Mr. Walquist's draft report (of the experience of State Employment Service personnel):

> . . . Lower level jobs, such as Posting Clerk, while not always requiring specific vocational training, do require that applicants be good at figures. Employers prefer high school graduates, but are often flexible in regard to this requirement. Typing, especially statistical typing, is helpful for many entry jobs.
>
> . . . it is difficult to get high school graduates who are good at figures . . . the so-called Recordkeeping courses are inadequate . . . . Graduates should be more familiar than they are with the forms used in business, as well as with the finished clerical product.

Job and "Data" Level

"Job Level" estimates (last column of Table 72) used the same criteria that were applied to questionnaire respondents, ones unique to the present investigation. Standard Labor Department job-analysis procedures, however, include a different basis for estimating the intellectual demands of the various occupations included in the DOT. "Data Level," as defined in the U.S. Department of Labor's Handbook for Analyzing Jobs (1972, pp. 73-76), consists of seven levels, from high to low, as follows:

0 Synthesizing

1 Coordinating

2 Analyzing

3 Compiling: Gathering, collating, or classifying information about data, people, or things. Reporting and/or carrying out a prescribed action in relation to the information is frequently involved (pp. 74-75).

4 Computing: Performing arithmetic operations and reporting on and/or carrying out a prescribed action in relation to them. Does not include counting (p. 75).

5 Copying

6 Comparing

Of the 63 jobs listed in Table 72, one (the Trust Accountant, Job No. 6) was assigned Data Level 1 by the occupational analysts. There were three 5's (Nos. 11, 18, 20) and one 6 (No. 37). The remaining 58 jobs were assigned in approximately a 2 to 1 ratio to Data Levels 3 and 4.[28] With the exception of the commercial bank's Trust Accountant (requiring college training), none of the jobs analyzed required abilities above "Compiling." Neither Synthesizing ("Integrating analyses of data to discover facts and/or develop knowledge concepts or understandings"), Coordinating ("Determining . . . operations or actions to be taken . . . ."), nor Analyzing ("Examining and evaluating data. Presenting alternative actions in relation to the evaluation . . . .") were judged, according to Labor Department definitions and criteria, to be applicable to the the jobs surveyed.[29]

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[28]At Data Level 3 were Job Nos. 2-5, 7, 12-17, 19, 21, 23, 24, 26, 33, 36-39, 41-45, 48-52, and 55-63. At Data Level 4 were Job Nos. 1, 8-10, 22, 25, 27-32, 34, 35, 46, 47, 53, and 54.

[29]Something of the flavor of the higher-order data levels may be gained from these Handbook examples: Synthesizing ("Formulates hypotheses and experimental designs . . . ."); Coordinating ("Plans advertising campaign . . . ."); Analyzing ("Reviews loan applicant's financial status . . . .").

Details of Job Activities

Drawn from Mr. Walquist's draft report, the job activities that go with the 11 nonentry jobs are shown in Table 75; those that go with the 52 entry jobs, in Table 76. In both tables, the row numbers and designations agree.

Table 75

Distribution of Nonentry Jobs and Positions Requiring Various Job Activities

Job Activity			Jobs (N = 11)		Positions (N = 24)	
			N	%	N	%
1. Double entry			8	73	21	88
2. Ledgers	J[a]	P[b]				
c. 3 columns	9%	8%				
d. More than 3 columns	9%	4%				
e. Info. not available	18%	33%				
Total			4	36	11	46
4. Reconcile subsid. ledgers with genl. ledger accts.			3	27	7	29
5. Journals	J[a]	P[b]				
a. 2 columns	9%	17%				
b. 3-5 columns	9%	8%				
c. 6-10 columns	18%	12%				
d. More than 10 columns	9%	25%				
Total			5	45	15	62
8. Trial balance			1	9	4	17
9. Reversing entries			5	45	12	50
10. Preparation of vouchers			1	9	6	25
11. Preparation or processing of debit-credit memos or tickets			3	27	4	17
12. Computation			11	100	24	100
13. Coding for computer input			8	73	20	83
14. Preparation of summaries or recapitulations			6	55	12	50
15. Use of pre-printed forms			11	100	24	100
16. Manual processing of IBM cards			1	9	1	4
17. Verify or prove manual records against computer printout or extract data from printout for manual preparation of summaries or reports			7	64	11	46
18. Use of calculating or adding machine			8	73	13	54
19. Operate a bookkeeping machine			1	9	6	25
20. Operate CRT on-line with computer			1	9	2	8

[a]Jobs [b]Positions

Table 76

Distribution of Entry Jobs and Positions Requiring Various Job Activities

Job Activity			Jobs (N = 52)		Positions (N = 213)	
			N	%	N	%
1. Double entry			18	35	106	50
2. Ledgers	J[a]	P[b]				
a. 1 column	2%	1%				
b. 2 columns	4%	7%				
c. 3 columns	4%	1%				
d. More than 3 columns	8%	11%				
e. Info. not available	2%	*				
Total			10	19	42	20
3. Balance and close books			2	4	16	8
4. Reconcile subsid. ledgers with genl. ledger accts.			5	10	31	15
5. Journals	J[a]	P[b]				
a. 2 columns	8%	8%				
b. 3-5 columns	10%	11%				
c. 6-10 columns	2%	2%				
d. More than 10 columns	10%	2%				
e. Info. not available	6%	4%				
Total			18	35	56	26
6. Profit and loss statement			2	4	16	8
7. Balance sheet			1	2	1	*
8. Trial balance			6	12	14	7
9. Reversing entries			10	19	36	17
10. Preparation of vouchers			7	13	20	9
11. Preparation or processing of debit-credit memos or tickets			17	33	91	43
12. Computation			47	90	182	85
13. Coding for computer input			10	19	84	39
14. Preparation of summaries or recapitulations			34	65	141	66
15. Use of pre-printed forms			52	100	213	100
16. Manual processing of IBM cards			5	10	24	11
17. Verify or prove manual records against computer printout or extract data from printout for manual preparation of summaries or reports			15	29	71	33
18. Use of calculating or adding machine			43	83	170	80
19. Operate a bookkeeping machine			9	17	37	17
20. Operate CRT on-line with computer			1	2	1	*
21. Operate other on-line devices			1	2	25	12

The information about nonentry jobs in Table 75 is given mainly to provide (together with the entry-job information of Table 76) complete coverage of all 63 jobs listed in Table 72. The major interest is in, and discussion is therefore confined to, the entry-job information of Table 76. It is apparent that:

1. Everyone uses locally developed pre-printed forms (Row 15), and nearly everyone computes (Row 12)--mainly by desk calculator or adding machine (Row 18).

2. The concept of double entry is applicable to only half the positions (individuals) and to a little more than one-third of the jobs (Row 1).

3. There is much preparation of recapitulations and summaries (Row 14) and lesser, but nontrivial, involvement in journalizing (Row 5), preparation or processing of debit-credit memos or tickets (Row 11), and verifying of manual records against computer printouts (Row 17). Posting to ledger accounts (Row 2) and making reversing entries (Row 9) are less common, and reconciling of subsidiary with general ledger accounts (Row 4) is still less common.

4. Few prepare a trial balance[30] (Row 8), and the preparation of a profit and loss statement or of a balance sheet is practically nonexistent (Rows 6-7). The same applies to closing the books (Row 3).

The unmistakable inference from the foregoing data is in perfect accord with that of the earlier studies by Luxner (1970) and by Lanham, et al. (1970). It may be concluded that:

> There is no justification whatever for including in high school bookkeeping training the preparation of financial statements (trial balance, P & L statement, balance sheet). Such records are rarely if ever prepared by holders of entry-level positions. Even direct work with ledgers and journals is only moderately present among holders of beginning positions.

The presumably prevailing assumption by bookkeeping teachers is that ad-

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[30]According to Mr. Walquist, little so-called trial balance work is of the classical kind--a trial balance "of the books." Instead, local figures (e.g., open items related to C.O.D. sales) are extracted from control records and listed and totalled for comparison with general ledger entries--a listing for comparison with the books, not a trial balance of the books. "Posting" is another term loosely used by employers and employees, often consisting of entering amounts on 1-column intermediate forms, not to ledger accounts. The employer terminology of the Labor Department job descriptions is sometimes not the technically correct terminology of the bookkeeping textbook.

vancement to higher level positions requires the treatment of financial statements in high school instruction. That assumption is manifestly a gratuitous one. For one thing, there is no discernible reason for bookkeeping occupations to be thought to differ from the mass of occupations in our society; advancement is overwhelmingly a function of job experience and, sometimes, of additional formal schooling undertaken concurrent with employment. For another thing, by very definition, the number of lower-level positions in any field swamps the number of higher-level ones; there are always more braves than chiefs. Thus, to teach all persons activities and concepts that will in fact apply to only a few is hardly a defensible proposition. Those who "have what it takes" will acquire the necessary advanced knowledges and skills either on the job or via advanced school training undertaken after employment, sometimes with costs underwritten by the employer.

As will be made evident by the illustrative job descriptions and record forms discussed next, the beginner's work tends to cover a piece of a piece of an entire accounting operation, largely self-contained and--from the viewpoint of what the worker needs to know to execute that "piece"--only remotely associated with superordinate bookkeeping concepts or financial statements. The concept of "balance" or "difference" is clearly a viable one even at the lowest levels of work; so is verification of amounts from one record to another. But those concepts are everyday ones, resting on no special skills other than simple arithmetic. In summary:

> For the most part, the beginning bookkeeping employee tends to deal with a single class of transactions, does much arithmetic associated with that class, and records the results of that arithmetic on prelabeled forms.

Illustrative Job Descriptions and Record Forms

The information generated from the job analyses by the staff of the Occupational Analysis Field Center covers 748 pages, plus a 56-page introductory overview. For each of the 67 job titles involved[31] there are a number of pages of formal Labor Department reporting forms. In all, more than half the 748 pages consist of samples of the various bookkeeping forms used by the employee on his job: from one such form for some job titles to more than a dozen for other job titles. Selected from the detailed job descriptions

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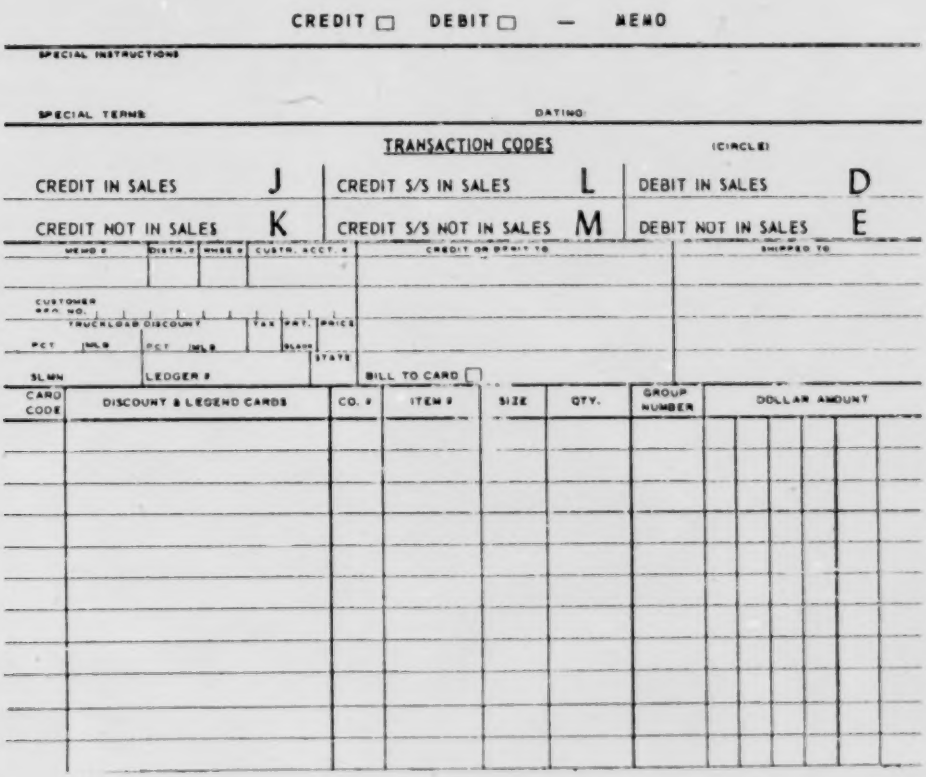
[31]Three of the 67 titles were discarded from the present report because they involved purely clerical tasks, without a bookkeeping component. Another two titles were combined into one because the duties were virtually identical, leaving 63 job titles dealt with here.

and sample bookkeeping forms for illustrative purposes here are a number that represent various levels of (a) requirements for conceptual knowledge, (b) volume of details that make up the job, and (c) involvement in computerization. For display purposes in this report, the original forms have been substantially photoreduced.

1. Rudimentary Debit-Credit Knowledge Required, Little Detail. The major activity of the Assistant Credit Memo Clerk for the paint manufacturer (Job No. 36, Table 72), accounting for 35 percent of that person's time, is the preparation of Debit-Credit Memos, a 7½" x 8¾" form, illustrated below. On the form, the employee copies identifying information from earlier records, including a precoded "Request for Credit" form. The conceptual knowledge required is confined to circling the pertinent Transaction Code on the debit-credit memo. Completed memos are sent to the IBM Department for computer preparation of customer-credit invoices and other accounting records. In summary, Job No. 36, as a result of computerization, does not involve the employee in keeping or posting to books of account.


CREDIT ☐ DEBIT ☐ — MEMO

SPECIAL INSTRUCTIONS

SPECIAL TERMS DATING

TRANSACTION CODES (CIRCLE)

CREDIT IN SALES	J	CREDIT S/S IN SALES	L	DEBIT IN SALES	D
CREDIT NOT IN SALES	K	CREDIT S/S NOT IN SALES	M	DEBIT NOT IN SALES	E

MEMO # | DISTR. # | WHSE # | CUSTR. ACCT. # | CREDIT OR DEBIT TO | SHIPPED TO

CUSTOMER P.O. NO.

TRUCKLOAD DISCOUNT | TAX | PKG. | PRICE

PCT | MLB | PCT | MLB | BLANK | STATE

SLMN | LEDGER # | BILL TO CARD ☐

CARD CODE	DISCOUNT & LEGEND CARDS	CO. #	ITEM #	SIZE	QTY.	GROUP NUMBER	DOLLAR AMOUNT

Fig. 1. Debit-Credit Memo (Job No. 36)

2. Payroll Work Converted from a Bookkeeping to a Clerical Task. Payroll activities appear to be among the easiest to computerize, and the effects of computerization are summarized in the occupational analyst's report covering Job No. 55 of Table 72 (See Fig. 2, below), as follows:

> Before computerization the payroll clerks prepared the entire payroll . . . . What has happened [as a result of computerization] is that the quantity of posting and computing by these workers has been reduced, and instead the Payroll Clerk transcribes and codes the raw data in convenient form for . . . keypunch operators. The computer itself does most of the actual calculating. On the other hand, the Payroll Clerks now do more balancing and checking of the finished payroll to provide better control than was possible under the old system.

The same conclusion applies to Job No. 37 (see Fig. 3), as follows:

> The computer has relieved the Payroll Clerk of the bulk of the computational and posting work.

The detailed descriptions of Jobs 37 and 55 swarm with the verb "transcribe." Information from a variety of input forms is merely copied on forms designed for the keypunch operator, as illustrated in Figs. 2 and 3, the originals of which are 8½" x 11".

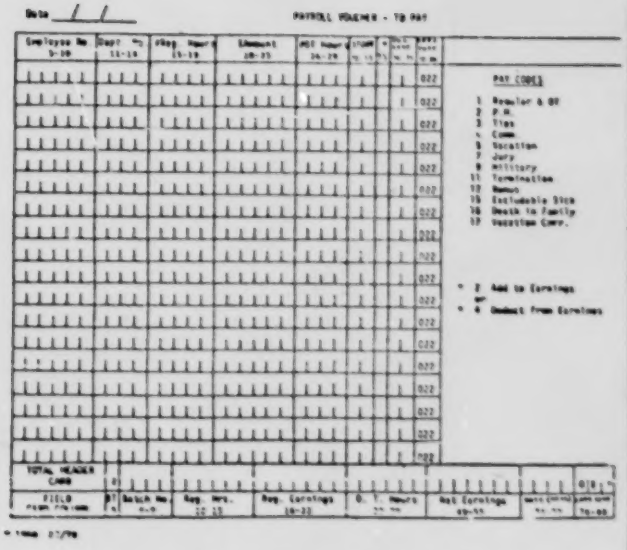


Fig. 2. Payroll Form (Job. No. 55)

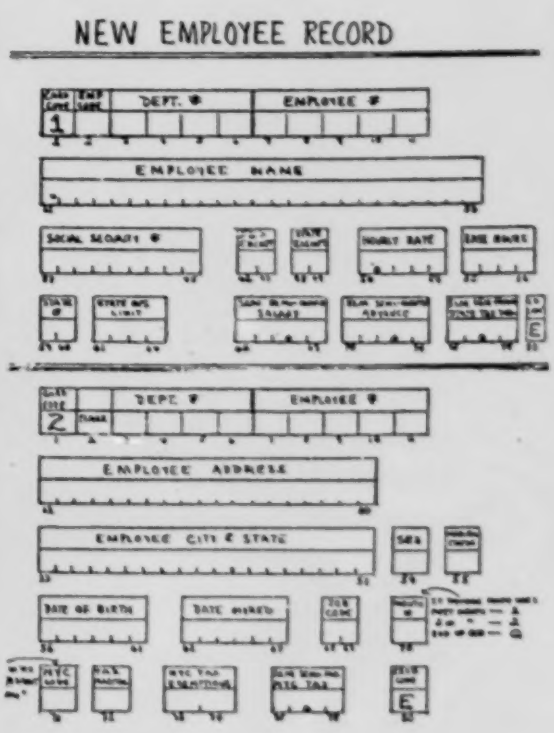


Fig. 3. Payroll Form (Job. No. 37)

3. Transcription of Much Detail for Computerization. Again illustrative of an essentially clerical task devoid of bookkeeping concepts, but involving much detail, is the work of the Mortgage Clerk for the commercial bank (Job. No. 4, Table 72). The occupational analyst's Job Summary reads:

> Compiles and codes identifying and financial mortgage data and enters on coding sheet for processing by Keypunch Operators . . . .

The form shown in Fig. 4 (original size, 8½" x 14"), together with another worksheet (for recording "changes in payment amounts due to rise in expenses such as taxes and insurance"), capture 90 percent of the job duties of the Mortgage Clerk; and the input data for these forms is contained in a number of earlier forms from which the pertinent information must be selected. The various forms are unique to the particular job and establishment.

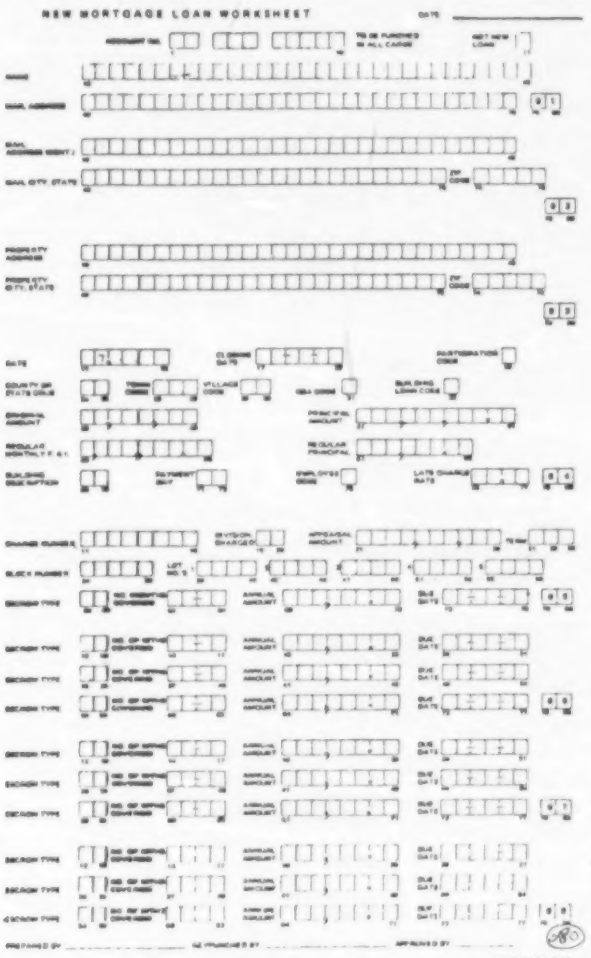


Fig. 4. Worksheet (Job. No. 4)

4. Use of Bookkeeping Terminology without the Need to Understand Concepts. The Restaurant Audit Clerk for the hotel (Job No. 21, Table 72) checks for accuracy such original papers as cashier's records, restaurant checks, etc., (60 percent of his time) and compiles a daily report on the form shown as Fig. 6 on the next page (15 percent of his time). As shown (original size, 14" x 19"), each class of transaction or item is prelabeled on the form, so that dollar entries need merely be copied in the correct place. Debits and credits are summarized at the right, but the explicit listing of each debit and credit entry makes it unnecessary to understand the theory underlying the terminology. The bulk of the employee's work is essentially as a figures clerk, and the hiring prerequisites include no more than a 7th-grade elementary school education.

5. Much Detail, Moderate Conceptual Knowledge Required. The occupational analyst's task description for the bank's Journal Clerk (Job No. 2, Table 72: bookkeeping training helpful but not required) is given verbatim and in full below, and as much as could legibly be reproduced of the loan journal (original size 16½" x 28") is shown as Fig. 7 (p. 152); omitted for reasons of space are four columns at the right and four at the left of the form. In all, the form contains more than 150 categories.

1. Journalizes loan- or letter-of-credit-related transactions: Receives journal copies of Payment Schedules, Acceptance Schedules, Loan Transaction Tickets, debit and credit memos, and other loan- or letter-of-credit related business papers from other personnel for journalizing and summarizing. Totals and checks off each type of entry (such as interest, commission, customer's liability, or acceptances outstanding) in entire batch, using twelve-column adding machine. Writes entry category (account title) above each totalled group to identify for journalizing. Goes through batch repeatedly until all entry categories have been totalled. Transcribes totals from tapes to Journal under account titles indicated on tapes. Writes account titles in ink if not pre-printed on journal. Totals and enters appropriate debits to offset credits and vice versa as indicated on business papers. Totals all debits and all credits on journal and compares totals for balance. Compares journal, tapes, and business papers item-by-item to locate error if difference is found between journal debit and credit totals. Makes corrections as necessary or refers to responsible employee for correction. Repeats foregoing procedure with each batch of papers received. (90%)

2. Summarizes journal: Totals figures under each account heading in journal at day's end. Transcribes each total to debit or credit column opposite preprinted account number and name on journal proof sheet (recapitulation) for further processing by Keypunch Operators. Writes in account numbers and names not pre-printed. Totals and balances debits and credits, using adding machine. Enters time, date, and initials on proof sheet for reference. Forwards original and carbon copies of proof sheet to other departments for further processing. Sorts, batches, and forwards tickets and tapes to specified personnel for additional processing. (10%)

Fig. 5. Job Description (Job. No. 2)

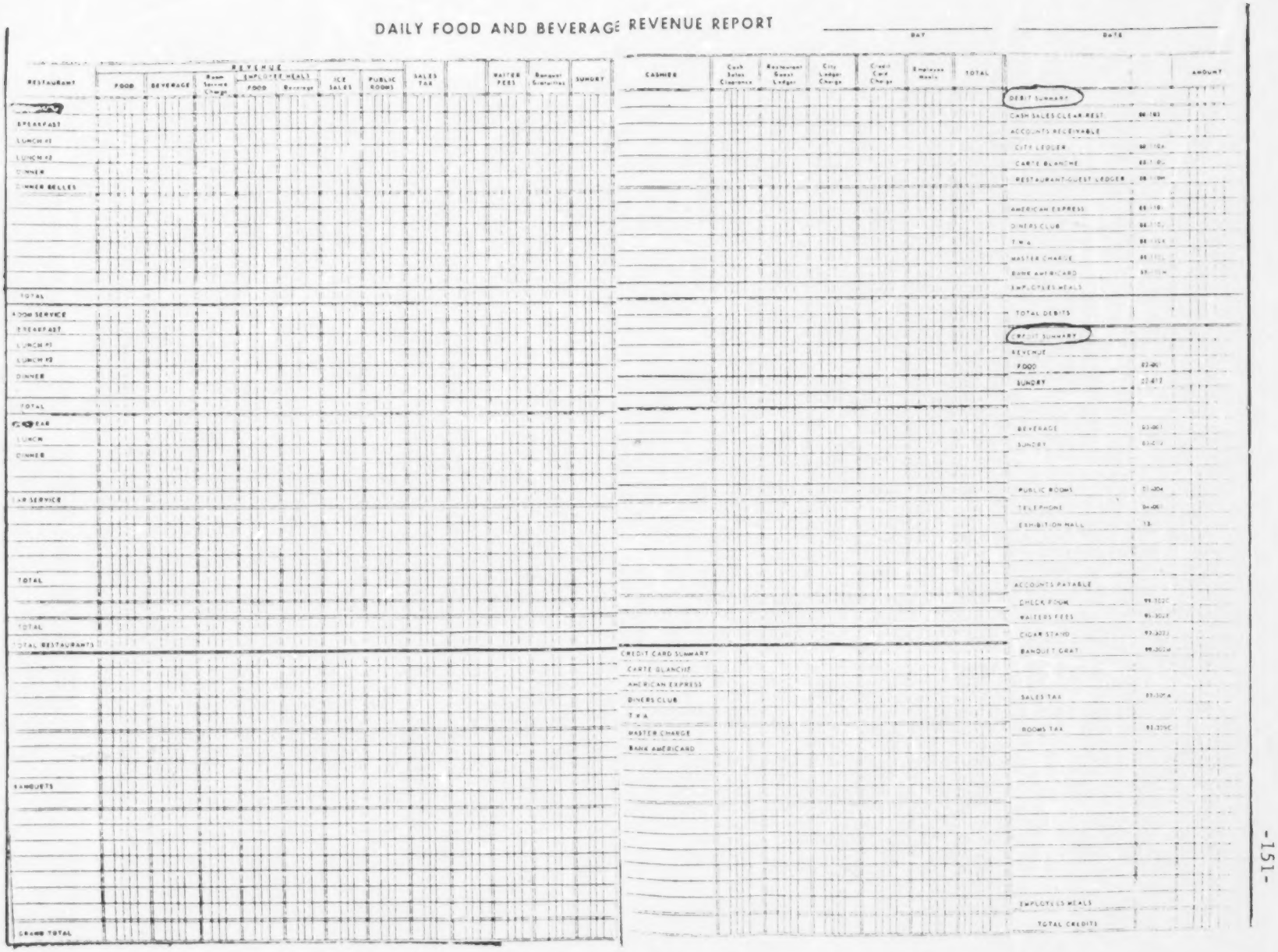


Fig. 6. Daily Journal Report (Job No. 21)

LOAN DIVISION JOURNAL

DATE_____ _____

DEBITS

BLOCK DIVISION	TRANSIT	OTHER OFFICE TELLER	LETTER OF CREDIT	COLLECTION	MONEY TRANSFER	CUSTODIAN	SECURITIES CLEARANCE
	CORPORATE TRUST						
24	25	26	27	28	29	30	
10 Col TEAM	11 Col A/O	12 Col A/O	PURCHASED D F D PAYMENTS L/O LA	SUNDRY TEAM	SUNDRY A/C	45 MISC ACCRUAL	
	ACCOUNTS RECEIVABLE		JUNIOR MTGS AWAITING PAYMENT	ESCROW	ESCROW — DEBITS IN PROCESS Sub M	CASH COLLATERAL	OFFICIAL CHECKS
NOTES PAYABLE	ACCRUED INTEREST NOTES PAYABLE	RESERVE FOR INCOME TAXES	CREDITS IN PROCESS BOND & MTGES	SUSPENSE			OFFER & SHORT
NOTES CLEARED	FEDERAL RESERVE BANK	CUST LIAB ON PARTIC—GRANTED		LOANS SOLD	LOANS IN PROCESS	LOANS SOLD RIGHT CORP	
OUTSTANDING PARTIC—GRANTED				INTEREST EARNINGS	CLEARINGS	SUSPENSE	INTEREST PAID NOTES PAYABLE

CREDITS

CREDIT CLERK	DEBIT CLERK	MAIL TELLERS	LOCK BOX	BLOCK DIVISION	TRANSIT	OTHER OFFICE TELLER	LETTER OF CREDIT
CDS—DAY	CDS—EVENING				CORPORATE TRUST		
20 CONSTRUCTION	BOND & MTGES	S-M SPECIAL	23	24	25	26	27
62	21 AGRICULTURAL TEAM	22 AGRICULTURAL A/O	10 Col TEAM	11 Col B/O	12 Col A/O		
				ACCOUNTS RECEIVABLE			JUNIOR MTGS AWAITING PAYMENT
				NOTES PAYABLE	ACCRUED INTEREST NOTES PAYABLE	RESERVE FOR INCOME TAXES	CREDITS IN PROCESS BOND & MTGES
				NOTES CLEARED	FEDERAL RESERVE BANK	CUST LIAB ON PARTIC—GRANTED	
				OUTSTANDING PARTIC—GRANTED			

Fig. 7. Loan Journal (Job No. 2)

6. Journalizing One Class of Transactions, Moderate Knowledge Required. The Cash Receipts Journal Clerk for the medical insurance carrier (Job. No. 30, Table 72) "Posts cash receipt deposits onto journals[32] and computes and balances accounts, by adding machine." The detailed job description shows: (1) Posts and computes daily deposits (40%), (2) Computes and balances daily deposit totals (30%), (3) Computes and balances monthly journal (25%), and (4) Computes and balances annual journal (5%).[32] The monthly "journal" form (original size 11" x 17") is shown as Fig. 8, below, and requires transcribing or copying of totals from the daily journal. As shown in Table 72, the employer requires no prior school training in bookkeeping, but provides 3 months of OJT.

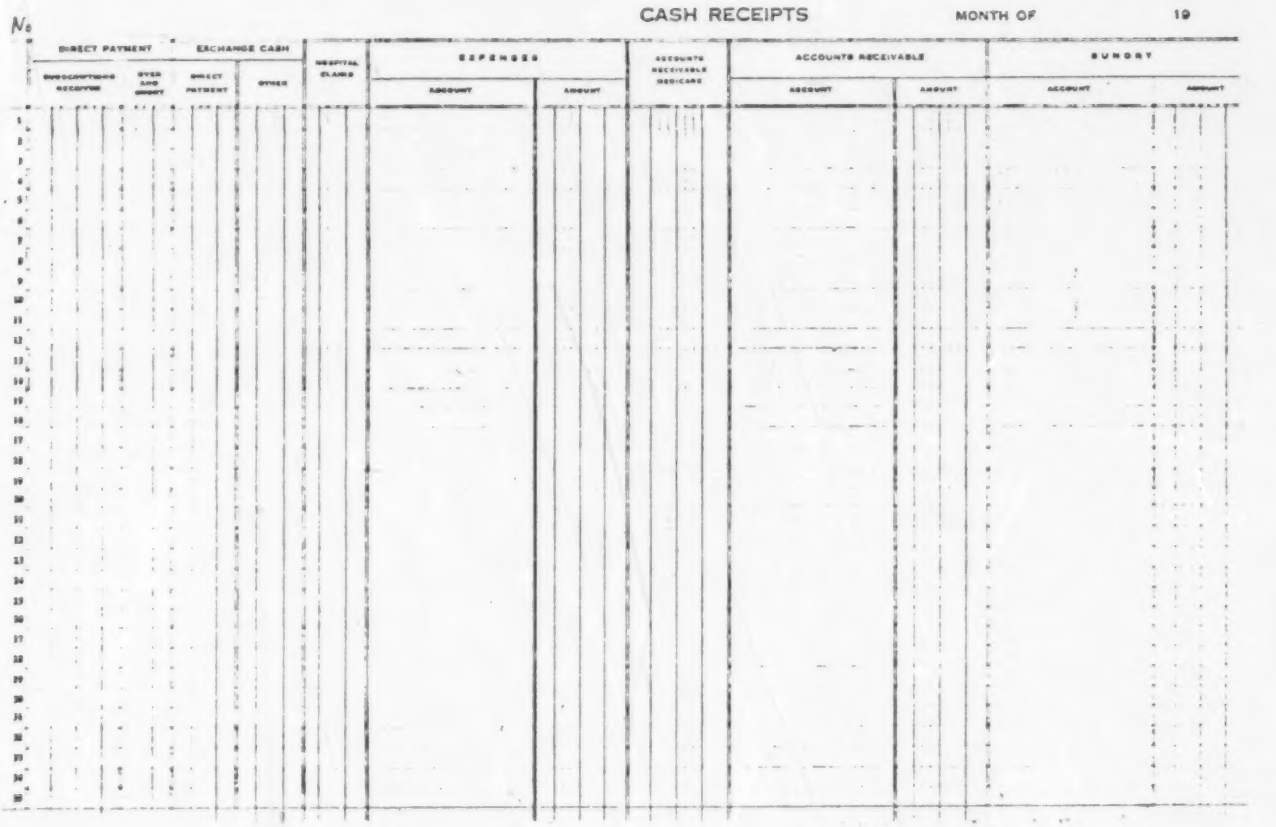


Fig. 8. Monthly Cash Receipts Journal (Job No. 30)

[32] A prime example of abuse of the term "post" (see the footnote on page 145). Also, a "journal" is a book of daily record; it is not compiled or maintained "monthly" or "annually." The terms "journal" and "journalizing" are apparently incorrectly and misleadingly used by some employers.

7. Specialized Journalizing, Moderate Conceptual Knowledge Required. The nonprofit publisher requires for the Securities Bookkeeper (Job No. 43, Table 72), besides one year of high school bookkeeping, a one-semester college course in "Investment Principles." The occupational analyst's job summary is quoted below, and the journal form (original size 9" x 11") covering 85 percent of the employee's work is shown as Fig. 9. Two months' OJT is supplied to the new employee by the employer's Investment Counselor.

> Verifies and journalizes purchases and sales of securities, reconciles Custodian's monthly statement of security-account transactions, examines record of investment income, gains, and losses to insure proper crediting by custodian, distributes investment income, gains, and losses to funds according to budget allocations and prepares investment journals, proves subsidiary investment ledgers against general-ledger control account, determines cash position of firm and transfers funds between banks to meet due payments, and performs miscellaneous incidental clerical tasks.

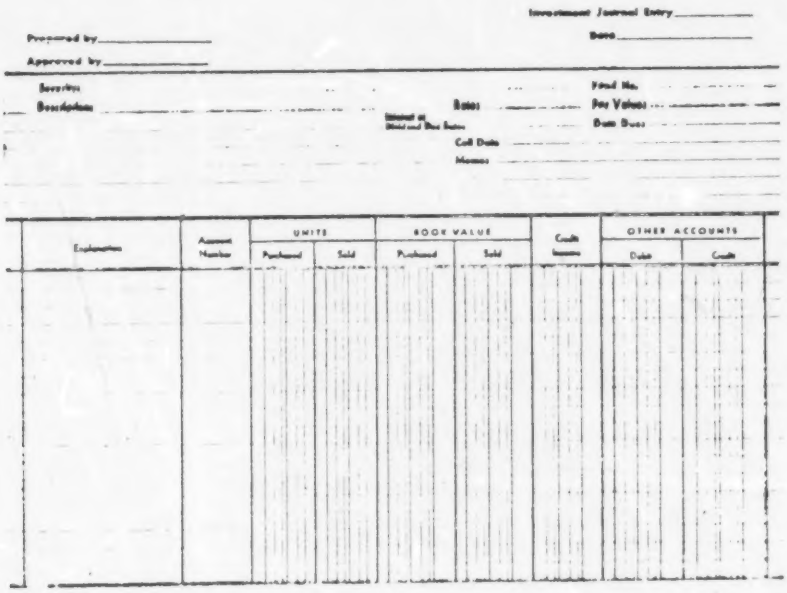


Fig. 9. Investment Journal (Job No. 43)

8. "Trial Balance" for Comparison "with" the Books. The C.O.D. Audit Clerk for the department store (Job No. 46, Table 72) devotes 25 percent of his time as follows.

> 2. Prepares trial balance: Enters control-book totals of open C. O. D. items on trial balance monthly, listing separately any debits over thirty days old, and compares total with general ledger in General-Accounting Department to verify accuracy. Compares item-by-item with general ledger if there is any cash difference or if any other difference is over fifty dollars, to locate error, and makes corrections as necessary. Prepares copy of final trial balance and forwards to company treasurer for his information. (25%)

For the audit clerk in question, the employer considers high school bookkeeping helpful but not required, and he provides two days of OJT to the new employee. That so modest a background permits preparation of a "trial balance" makes apparent that the term is not being used in the classical sense of a balance of the books but, instead, in the sense given in the quoted job description and characterized in the footnote on page 145--a listing for comparison with the books. Bringing that distinction to bear on the New York City and Upstate questionnaire respondents was not possible, however, because it had not been foreseen in drafting the job activities section of the questionnaire. There is little question but that many of the questionnaire respondents who reported they prepared trial balances--but whose other activities seemed less consequential--were using the term in the second of the two senses described above. The questionnaire data on Activity No. 88 should be interpreted accordingly (i.e., many of those assigned to Job Level 3 or 4 should have been 2's or 3's).

More important is the implication for bookkeeping instruction: the desirability of explicit treatment of the second usage of the term, probably as a precursor to its classical meaning.

As a second illustration of a trial balance in the second usage of the term--this time at a more sophisticated and complex level--consider the accounts receivable trial balance prepared by the department store's Accounts Receivable Bookkeeper (Job. No. 56, Table 72), whose employer requires two years of high school bookkeeping training. The occupational analyst's job summary is reproduced below, and the portion of the detailed job description applicable to the trial balance work, plus the trial balance form (original size, 11" x 17") are displayed--the latter as Fig. 10--at the top of the next page. It may also be mentioned that in lieu of OJT, the employer describes "orientation" to the job as consisting of "Six months to become familiar with company's bookkeeping procedure."

4. JOB SUMMARY:

Summarizes accounts-receivable-related control sheets into combined control for comparison with parallel accounting records, reconciles accounts receivable with general-ledger control accounts, prepares monthly accounts-receivable trial balance to verify controls against computer printout and other independently generated figures, and performs related checking and balancing tasks.

3. Prepares monthly accounts-receivable trial balance: Enters, in "Billing Balance" column of accounts-receivable trial balance, billing balance as shown on accounts-receivable computer printout, and balance of Manual Items from bookkeeping-machine-generated figures. Totals billing-balance column, using ten-column adding machine, to obtain combined balance, and enters on "Combined EDP and Manual" line. Enters control balances from control sheets for same data in "Control Detail Balance" column, enters control adjustments balance in "Adjustments" column, subtracts or adds adjustments to control balances, and enters results in "Adjusted Control" column to provide basis for comparison with computer and manual balances. Computes and enters overages and/or shortages in appropriate column. Computes and enters net variations by adding or subtracting computer and manual figures. Adds monthly figures to year-to-date figures on previous month's trial balance and enters in "Year-to-Date" column. Forwards trial balance to reproduction room for duplication and delivery to specified company personnel. (35)

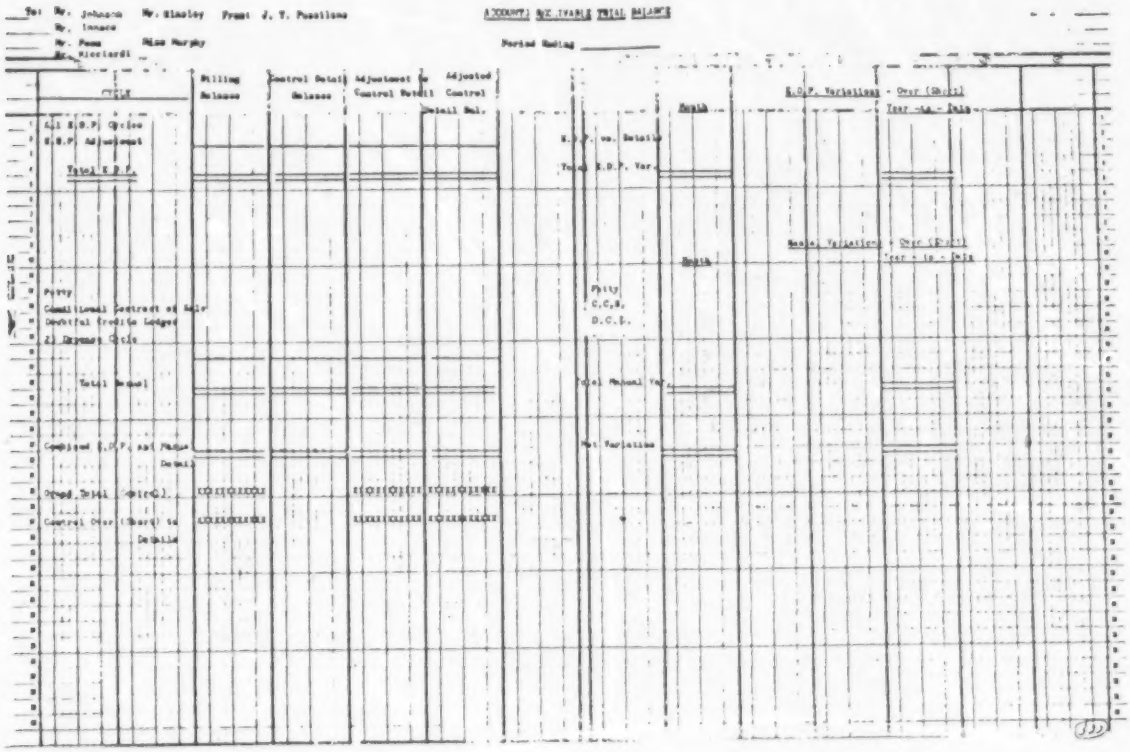


Fig. 10. Accounts Receivable Trial Balance (Job No. 56)

9. Precoded Journal, Ledger, and Profit and Loss Statement. Our Job No. 45 (Asst. Bookkeeper, General) is designated "Comptometer Operator" by the employer--which provides a good illustration of how misleading employer-designated job titles can be. As reported by the occupational analyst:

13. General Comments

Re: Item 1, Establishment Job Titles. This job does not convert to the D.O.T Title of Calculating Machine Operator (clerical) 216.482, since the duties include compiling and posting in addition to simple calculating and reporting. Note that Bookkeeping training is a hiring requirement for this job in this establishment is not a simple Calculating Machine Operator, but a Bookkeeper II (clerical) 210.382.

Additional comments by the occupational analyst about the viability of comptometer training speak for themselves.

> Re: Item 6a The Manager of the Statistical Department in this establishment advised the Analyst that Comptometer Operators are in extremely short supply because young people today do not enter the field, preferring to take training in key-punch operating, which is easier to learn. She feels that if students could be persuaded to learn the comptometer as part of their bookkeeping training it will fill a definite labor-market need. She states that she has had six openings for the past five years; that she has been able to keep these slots covered only with casual workers from the temporary help agencies. She has been able to obtain only two permanent workers during this period. This was when another department store went out of business.
>
> However, a check with the Research and Statistics Office of the Division of Employment reveals that the use of the Comptometer has almost completely phased out -- except in accounting firms and department stores -- with the advent of more rapid calculators and electronic computers. Department stores, too -- Research and Statistics advises -- have replaced Comptometers with such equipment as optical scanners and electronic computers, input with such devices as pre-punched price tags. Thus the limited demand for Comptometer Operators has created a limited supply. The Office Personnel Placement Center of the D. of E. gets very few orders for Comptometer Operator. We understand, however, that this store does not expect the Statistical Department to be computerized for seven to ten years.
>
> The demand for Comptometer Operator by accounting firms is seasonal only, and these operators must have a complete knowledge of bookkeeping in addition to their machine skill. See also general comment above re: Item 1.

The overall job summary is quoted next and, below it, the portion of the detailed job description applicable to the preparation of a Statement of Expenses. In its turn on the next page is the portion detailing preparation of the Profit and Loss Statement. Fig. 11, page 158, shows only that portion of the first of six pages of the Expense Statement (original size, 11" x 13") that could be legibly reproduced. Fig. 12, page 159, is also confined to a reproducible portion of a 14" x 19" Profit and Loss Statement.

> 4. Description of Duties
>
> Prepares merchandise and other operating reports of department-store chain by copying numerical data in appropriate columns of work sheets and reports, operating Comptometer and Calculating Machine to compute totals, extensions, percentages, and balances, and entering results in appropriate columns of reports; reconciles inventory estimates on merchandise reports with actual physical inventory; prepares general journals; posts to subsidiary ledgers; and prepares profit-and-loss statements and other statistical material for use by company executives or further processing by General Accounting or other departments.
>
> 2. Prepares departmental operating statements: Computes, using comptometer and calculating machine, dollar and percentage increases or decreases in operating figures (such as purchases, sales, and various expense items) store by store for each department, deriving figures from entries in stock ledgers and expense statements; enters results on lines of departmental operating statement by store and in columns by operating category (such as income, cost, and expense items); and totals each column to provide combined company-wide departmental figures. (15%)

5. Prepares profit-and-loss statement for each store: Transfers income, expense, and budget entries for current period and last-year period to specified columns of profit-and-loss statement from stock ledger, expense reports, records supplied by General Accounting Department, and tables of fixed dollar allowances, takes subtotals and totals of income and expense groups, using comptometer, and subtracts cost and expense totals from income totals to determine operating and net profit or loss. Computes percentage increase or decrease from previous period of each entered item, using electric or electronic calculator. (15%)

Evident from Figs. 11 and 12 is the prelabeling and precoding or, in general, the preclassifying of the components of the two statements. For the employee, the task consists of very large amounts of comptometer or calculator arithmetic and the correct matching of input data to the components of the preclassified forms. Although enormous attention to detail is re-

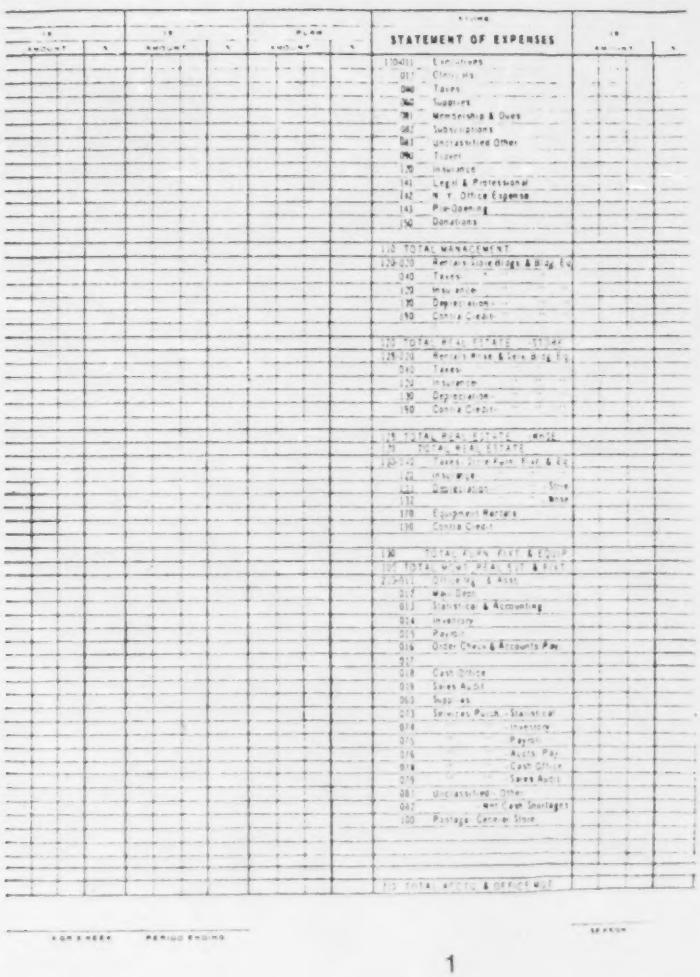


Fig. 11. Statement of Expenses (Job No. 45)

quired, the design of the forms has converted the tasks into ones requiring rather less sophistication than might be supposed from conventional bookkeeping instruction on the preparation of P & L and other summary statements.

The details of P & L Statement preparation are quoted at the left, below; and Fig. 12, at the right, displays a portion of the P & L statement.

> 5. Prepares profit-and-loss statement for each store: Transfers income, expense, and budget entries for current period and last-year period to specified columns of profit-and-loss statement from stock ledger, expense reports, records supplied by General Accounting Department, and tables of fixed dollar allowances, takes subtotals and totals of income and expense groups, using comptometer, and subtracts cost and expense totals from income totals to determine operating and net profit or loss. Computes percentage increase or decrease from previous period of each entered item, using electric or electronic calculator.

Figs. 11 and 12 rather handsomely illustrate general characteristics also evident in the earlier displays of record forms: their uniqueness to the particular establishment and job title, as well as the extent to which the requirement for cognitive understanding of bookkeeping concepts has been minimized by prelabeling, preceding, and preclassifying the items on the form. In addition, computerization has increased balancing and verifying activities, while reducing posting, computation, and the manual preparation of summary records.

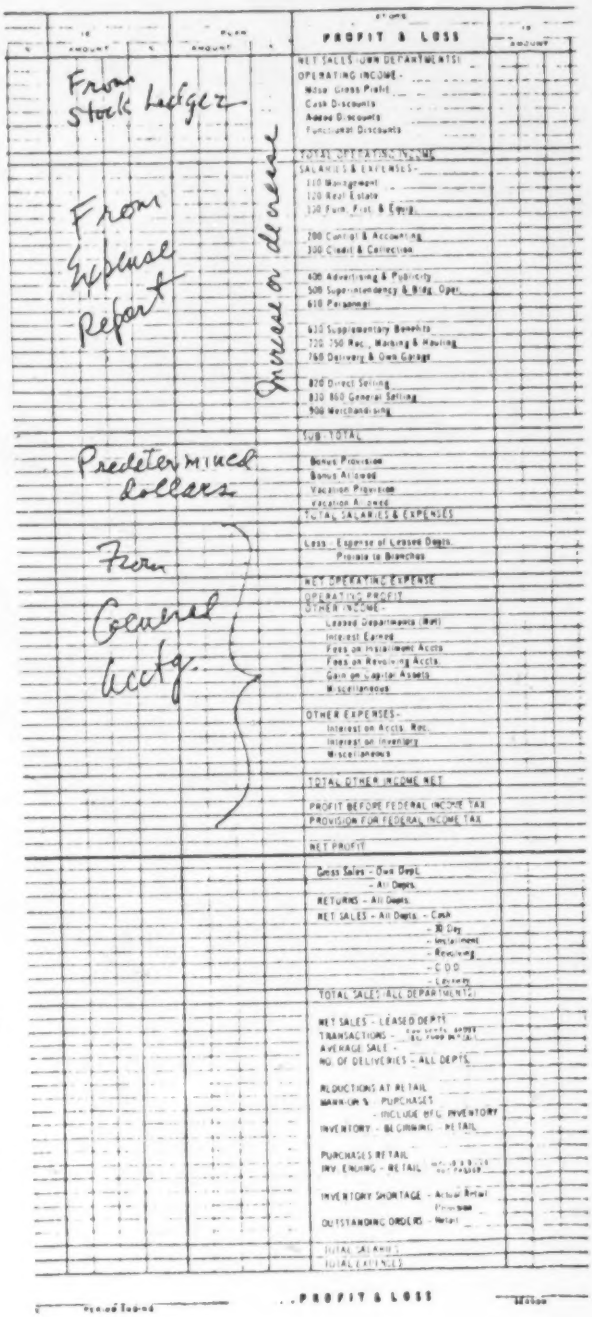


Fig. 12. P & L Statement (Job No. 45)

10. Detailed Journalizing and Account Analysis. A final and more detailed account is of Job No. 61 (see Table 72), for which the employer, the wholesaler of petroleum products, "prefers" but does not require two years of previous work experience in bookkeeping (e.g., via promotion from a lower-level job in the same establishment). The occupational analyst's task descriptions are reproduced below, together with a description of the journal form displayed as Fig. 13 on the next page. Illustrated here is the great particularity of the form to the uniqueness of the establishment's operations.

1. Journalizes purchases and sales (see General Comments): Receives purchase orders, customer invoices, and other sales-and-purchase-related papers for processing. Transcribes and codes details of each transaction from invoices and other papers to Normal Sales Journal Memorandum to provide data for payment vouchers and for preparation by Keypunch Operators of punched cards used in electronic data processing. Assigns codes, from memory or by consulting code book, to identify such details as general-ledger account, subsidiary account, supplier, source and destination of cargo, and delivery date. Debits total amount of sale, including miscellaneous charges, to customer accounts receivable. Credits total sales price of each product to sales. Credits miscellaneous anticipated charges, such as inspection and freight, to Clearing and Apportionment Account. Debits purchase price to purchases and credits purchase price to supplier. Makes Reversing Journal Entries to correct errors, such as erroneous billings. Prepares other journal entries as necessary to record various elements of transactions. Balances journal debits and credits by inspection or by totaling and comparing each side, using ten-key adding machine or pencil and paper. Makes necessary corrections if difference is found. Forwards completed journals and other papers to personnel responsible for vouchering. (70%)

2. Analyzes accounts: Reviews periodically (monthly or quarterly) certain prepaid and deferred-charge accounts, such as clearing and apportionment, to determine whether certain bookkeeping and other procedures have been carried out correctly. Scans computer printout of account to spot excessively aged open items. Pulls related journals and source documents from file and compares with printout entry to determine reason, such as error on invoice, posting to wrong account, or non-receipt of freight bill, for persistence of open item. Takes printout, journal, and documents to personnel responsible and points out need for correction or follow-up. (20%)

3. Maintains oil-exchange ledger: When journalizing oil-exchange transactions, posts entry at same time to exchange-ledger account of company receiving or supplying exchange cargo, debiting for supply and crediting for receipt. Balances account or accounts when current balance is requested by company officials. Balances ledger monthly and compares with general-ledger control account to verify accuracy. Compares exchange ledger item-by-item with control account and journals to locate error if difference is found. Makes corrections as necessary. (10%)

Normal Sales Journal Memorandum. A combination journal and coding sheet on which sales-and-purchases-related data are entered for transcription by Keypunch Operators for electronic data processing. The journal page is about 8½ inches high and 13 inches wide. Debits are prepared in the upper portion and credits in the lower. At the left side are three columns for entering numerical codes to identify (for input to the computer) the department involved in the transaction, the main (general-ledger) account, the subsidiary account, and further detailed classification of the transaction. The next column to the right is used to record either the quantity of the product sold or its value in foreign currency. U.S. dollar amounts are entered in the next column. Further to the right (on each line) are twenty-nine small spaces arranged in groups for the entry of additional codes, such as invoice numbers, delivery and mail dates, codes to identify affiliated companies, and destination of cargo. A separate journal page is used to record the details of each pair of transactions (purchase and sale of the same cargo).

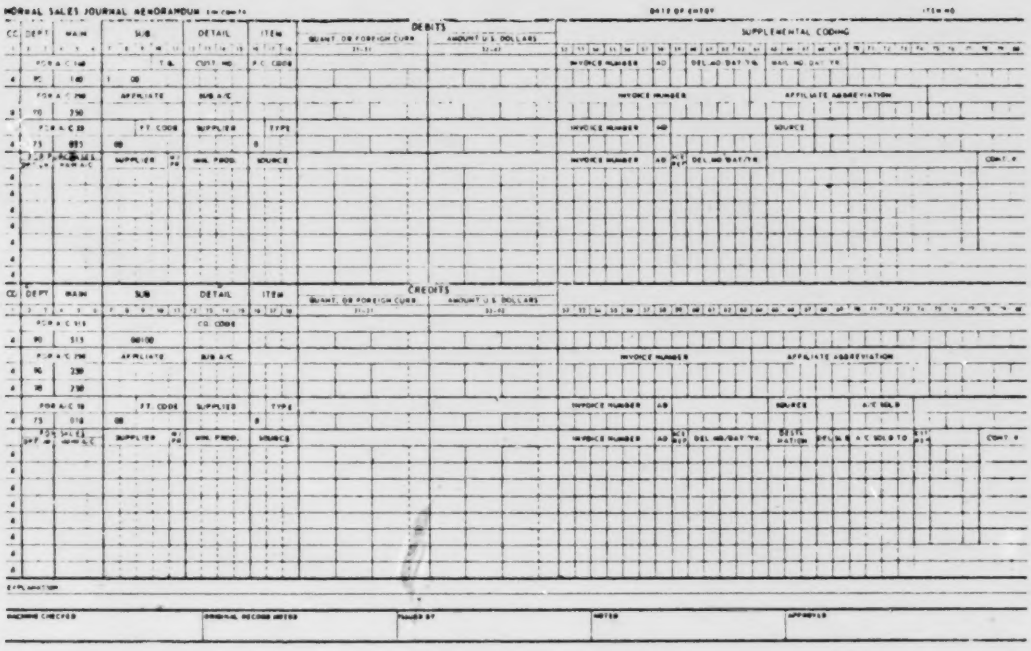


Fig. 13. Sales Journal Memorandum (Job No. 61)

Also of interest is the projected restructuring of the job, paralleling the one already in effect for Job No. 63 (see appendix pp. 222-226).

Re: Projected restructuring of this job.

This job will be considerably restructured by the end of 1972 as a result of changes in computer input procedures. Instead of preparing a journal for the Keypunch Operators, the ACCOUNTING CLERK - CARGO will post directly to the computerized ledger* by means of the typewriter-style keyboard of an IBM 2260 Display Station connected by cable to the computer itself. As data is typed into this device it is displayed on a television-type screen where it can be observed by the operator for errors. The computer can also be programmed to detect certain types of mistakes, such as non-existent account numbers or codes, and to flash an error signal on the screen.

The specific details of the job restructuring cannot be determined at this time, since the System Analysts have not yet fully evaluated the accounting procedures. Probably, however, the purchase-sales data will be transcribed via the keyboard directly from source documents (such as purchase orders) and code book. It may be that the functions of this and other jobs in the Cargo Sales/Supply Section will be merged for simultaneouse input via the Display Station as computer storage and output are combined in one operation. Thus the computer might electronically calculate the cargo price and automatically print out the invoice at the same time that it is processing and storing the data which the clerk is typing in.

However, while there will be some changes in job duties and relationships, the company does not contemplate any substantial reduction in staff. The purpose of the new system is to speed up the billing process and to facilitate the retrieval of critical accounting data rather than to cut costs. The keypunch step, of course, will be bypassed.

*Ledger data stored on magnetic tape rather than recorded in books.

Summary

The several general characterizations and associated inferences given in connection with the particular job titles discussed in the preceding pages are pulled together and listed below. As background for considering them, it should be remembered that the establishments surveyed by the Labor Department occupational analysts do not purport to be, in the technical sense, a "representative" sample of all employers of bookkeeping/accounting personnel. Instead, they cover a range of standard industrial classifications and firm sizes and were identified for and by occupational analysts as cooperative ones. In addition and more important for present purposes, the particular jobs surveyed were selected to meet the purposes of the present investigation: focus on entry-level positions and on the effects of computerization on job duties. Finally, the particular jobs examined in detail in the subsection entitled "Illustrative Job Descriptions and Record Forms" (pp. 146-161) are illustrative, not necessarily comprehensively representative of the many hundreds of forms associated with all 63 of the jobs detailed in Table 72. Their infinite variety resists capturing in any sample. Instead, the ones selected for display are meant to convey the "flavor" of the range of variation for amount of detail, conceptual knowledge requirements, and the effects of computerization. That understood, the major findings (and inferences from the findings) of the Labor Department occupational analyses are:

1. For one-fourth of entry level jobs, not more than two years of high school is required; for another two-thirds of the jobs high school graduation is required or preferred (Table 73, p. 135).

2. More than half the jobs require no previous school training in bookkeeping. For another 31 percent of entry jobs, covering about one-sixth of the positions, school training in bookkeeping (or math) is either required or preferred (Table 74, p. 136). The dominating requirement, as voiced by all employers, is that the applicant be good at figures.

3. Whatever the job applicant's background, it is apparent from the unanimity of on-the-job training (preceded for highly specialized jobs by formal in-plant courses) that--for the most part, if not in all instances--performing the activities of entry level jobs does not require prior school training in bookkeeping; anyone good at figures can learn the job on the job. The uniqueness of each employer's accounting practices and accompanying rec-

ord forms (see below) probably accounts in large part for the phenomenon. That is: Bookkeeping concepts exist and could be associated with the various details of job activities--ones treated in generic form in conventional high school instruction in bookkeeping; however, transfer or application of general concepts to the myriad of superficially varying job practices and record forms seems not to have been accomplished. The latter inference seems a necessary one from the frequency with which employers do not require school training in bookkeeping and the unanimity of on-the-job training regardless of prior school background. Indeed, the characteristics of the labor supply for bookkeeping positions is no doubt one of several major factors that have led employers, via computerization and record-form design, to reduce to a minimum the need to understand bookkeeping concepts in order to carry out an entry-level job. To take just one, but compelling, instance (Row 1 of Table 76, p. 144): Little more than one-third of the entry jobs, covering only half the positions, invoke double-entry concepts or involve double entry activities. That is--

4. Overwhelmingly, an entry job deals with a piece of a piece of a piece of an entire accounting operation (e.g., only C.O.D. sales, only mortgage loans, only items that eventually become debits--or credits--to a single account or class of accounts), with no need to "understand" the status of that limited activity in relation to "the books as a whole." In fact, a leading characteristic of computerization of financial data is computer preparation of various summary records from piecemeal inputs. Moreover, as exemplified by the Labor Department findings, computerization is on the increase and will surely become increasingly available to small employers either on a shared-time basis or via subcontracting to data-processing firms.

5. The computer now does much arithmetic formerly done by the employee, but still leaves to the holder of an entry job formidable amounts of arithmetic. Another effect of computerization is gross reduction of posting activities, offset by an increase in balancing (computing differences) and in checking or verifying manual against computer records. In effect, "bookkeeping" in the classical sense has been reduced--not only because of computerization but also via the design of record forms (see, for example, the right-hand column of Fig. 6, p. 151, and Figs. 11 and 12, pp. 158-159)--and the entry job has become more or less "general clerical,"

plus arithmetic.

6. Of particular relevance to conventional bookkeeping curricula, "trial balance" in the classical sense has little if any applicability to entry jobs. Less than one-eighth of the entry jobs and positions involve preparation of a trial balance--overwhelmingly in the sense of totalling an isolated type of item for comparison "with" the books (i.e., with the parallel ledger account). In addition, the preparation of a Balance Sheet or of a Profit and Loss Statement is an extreme rarity among beginning employees (see Table 76, p. 142), and their inclusion in conventional high school instruction is indefensible as a basis for entry employment.

The various summary findings may perhaps be further encapsulated as:

> No very compelling case can be made for any bookkeeping instruction in the high schools, but such instruction as might be justified would require substantial recasting in the direction of the piecemeal job duties of entry-level employment. There appears to be only a modest need for understanding of bookkeeping concepts and, when pertinent, they require treatment in a form that makes apparent their applicability to the piecemeal activities of beginning employees.

What is required, in a phrase, is "teaching for transfer"--evidently not well accomplished by conventional instructional methods or materials. More detailed discussion of instructional possibilities is contained in the concluding section of this report (pp. 193-199).

RESULTS AND DISCUSSION: III. SMALL-FIRM EMPLOYMENT

On the probably sound supposition that the 59 Upstate respondents were mostly employed in small firms (fewer than 10 employees), Upstate findings have been given in earlier tables in the first "Results and Discussion" section of this report (pp. 25-128). However, as explained earlier, there were many omitted and contradictory responses (not resolved by telephone follow-up), particularly with regard to job duties most dependent on conceptual understandings (journals, ledgers, financial statements). In contrast, the NYC data are free of contradictions and are reported here for the 56 small-firm respondents (32 in establishments with 0-3 employees, 24 in ones with 4-9 employees). Among those employees, 13 (23%) held "mixed" positions--in contrast to less than 4 percent of such persons in larger establishments. That trend also distinguished Upstate from NYC respondents. That is, whatever the size of city, the small-firm employee is more likely than the large-firm employee to have job duties outside bookkeeping.

The remaining information presented here compares the 56 small-firm NYC respondents with all 597 of them on variables judged to be related to job responsibility and entry-level employment, viz.; age, job experience, job-relevant schooling, job-responsibility level, employers' hiring requirements, employees' judgments of the value of schooling, previous employment, percentage of all duties in bookkeeping, and peripheral duties. In the expectation that any employer, regardless of size, would tend to assign only experienced persons to responsible duties, some of the variables enumerated above were selected to test that expectation. In other words, the involvement of many small-firm employees in more responsible duties--as reported earlier--is not in question. Rather, the question is: Does the small employer hire inexperienced high school graduates for such duties? The pertinent data are reported next and may be compared to the findings for all 597 NYC respondents [referenced in square brackets].[33]

Age and Work Experience. In relation to the age and work experience of

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[33] In only a few selected instances (e.g., EDP use, shown in Table 49, p. 88) were earlier findings displayed by size of firm. For comparative purposes here, it was not thought worth the effort to subtract frequencies for the 56 small-firm respondents from those for all 597 NYC employees--because the 56 make up only 9.4% of all NYC respondents, little affecting the comparative findings and leaving the inferences from those findings undisturbed. Specifically, were small-firm frequencies to have been subtracted from all-firm frequencies, differences would be slightly larger than those reported here.

all 597 NYC employees [Tables 4-6, pp. 26-28], the 56 small-firm employees are substantially older and more experienced. Specifically, none of the latter group was graduated from high school after 1969; in fact, only 3 (5.3%) were graduated after 1965 [Cf., 20.4% in Table 4]. With age inferred from high school graduation date, for the percentiles of the age distribution listed in Table 5 (p. 27), small-firm employees ranged between 2 and 11 years older, being 9 years older at the median (50th percentile)--46, rather than 37, years old.

As one would expect from the findings on age, substantially more work experience is also evident among small-firm employees. Table 77 displays the cumulative percentages for various amounts of work experience in the bookkeeping field among "All" (597) NYC respondents [taken from Table 6, p. 28] and for the 56 "Small"-firm NYC employees.

Table 77

Cumulative Percentage for Work Experience
Among Small-Firm and All-Firm NYC Respondents

	Years of Experience							
	-1	1	2	3-4	5-9	10-19	20-29	30+
Small	1.8	3.6	8.9	14.3	33.9	64.2	89.3	100.0
All	5.4	14.4	23.1	35.0	52.8	79.8	94.2	100.1

A glance at Table 77 shows that the median (50th percentile) lies in the 10-19 year interval for small-firm employees, but in the 5-9 year interval for all NYC respondents: specifically, 14.6 and 8.2 years of experience for small- and all-firm employees, respectively. Also, 4 times as large a percentage of all-firm than of small-firm respondents had less than 2 years job experience (14.4/3.6); for less than 3 years experience the ratio is 2.6 to 1 (23.1/8.9). The small-firm employee is clearly not a beginner. On the undoubtedly sound assumption that the establishment with fewer than 10 employees rarely employs more than one bookkeeper, the cover letter to small employers (see p. 228) specifically requested that our questionnaire be given to the "less experienced employee" should there be more than one bookkeeper employed. In the light of that request, the inference from the data of Table 77 is an unmistakable one; for if there were jobs in small firms for inex-

perienced new high school graduates, such persons ought to be found among our small-firm respondents. Instead, the inference mandated by the findings (fully agreeing with the Cook and Lanham study, see p. 6 of this report) is--

> In big cities, there are very few small-firm employment opportunities in bookkeeping for inexperienced new high school graduates. In fact, substantial work experience in the field is overwhelmingly characteristic of small-firm bookkeepers in big cities.

The big-city small employer obviously secures his bookkeeper from among the ranks of those who have acquired experience elsewhere. That conclusion is somewhat less applicable to small-city employment [see the Upstate data of Table 7, p. 29], showing one-fifth of the employees with less than 2 years of experience and a little more than one-fourth with less than 3 years of experience.[34]

Previous employment (prior to one's present job) is about as common among small-firm as among all-firm NYC respondents (63 vs. 67 percent). Percentage of total job duties devoted to bookkeeping is also comparable: 55 percent of small-firm respondents and 53 percent of all-firm NYC employees [Table 42, p. 82) devote 90+ percent of their time to bookkeeping.

Job-Relevant Schooling and Job Responsibility. Only modest differences in high school study of bookkeeping exist as between small-firm and all-firm respondents [all-firm data taken from Table 9, p. 32]. For the two groups (small vs. all) the percentages are: None, 51.8% vs. 47.4%; Recordkeeping, 7.1% vs. 4.0%; Bookkeeping, 41.1% vs. 48.6%. Slightly less involvement in Bookkeeping and slightly more involvement in Recordkeeping and in (presumably) academic high school programs prevail among small-firm respondents.

Adding post-secondary, job-relevant schooling to the data leads to outcomes (for schooling status and job responsibility level) as shown in Table 78.

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[34] In relation to the size-of-firm distribution for the population of all NYC private employers, the 597 NYC respondents over-represent large employers and under-represent small ones. Nonetheless, as explained in the Technical Appendix, the small-firm findings are perfectly representative of those that would have been secured had more small-firm employees been heard from. What is affected by the undersupply of small-firm respondents in New York City is the data on engagement in each of the 131 detailed job duties (Tables 67 and 68). Were more small-firm respondents to have been heard from, the percentage of all respondents engaged in some of the more responsible job duties would have been somewhat larger, while the percentages for the job duties heavily involving large-firm respondents would have been somewhat smaller.

Table 78

Schooling Status and Job Responsibility Level
Of Small-Firm and All-Firm NYC Respondents

Schooling	Percentage		Mean Job Level	
	Small	All	Small	All
None	19.6	27.8	2.82	2.54
HS Only	35.7	32.8	3.10	2.52
HS + Post-HS	12.5	19.8	3.71	2.92
Post-HS Only	32.1	19.6	3.83	3.44
Total	99.9	100.0	3.36	2.78

Table 78 shows, among small-firm employees, somewhat lower incidence of no school training, closely comparable involvement in high-school-only training, and approximately comparable involvement in post-high-school bookkeeping/accounting courses (44.6% vs. 39.5%). The small-firm job-level means reinforce the Upstate findings in showing more responsible work required among such employees, mildly correcting (at an overall mean of 3.36) the suspected inflation in the Upstate mean of 3.47. Also, job responsibility increases with job-relevant schooling, the notable contributor being post-high school courses. In small firms as in all firms, the employee who feels the need of formal schooling undertakes it.

Employers' Requirements. Among small-firm and all-firm NYC respondents, employers' present-job requirements for previous schooling and experience are indistinguishable; in small-all order the "Yes" percentages are: Schooling, 32.1% vs, 32,8%; Previous experience, 57.1% vs. 56.8% [all-firm data from Table 39, p. 77].

Employee Judgments of the Value of Schooling. On the question of the dependance of job performance on school training in bookkeeping/accounting (quoted on p. 68), there are substantial differences between small-firm and all-firm NYC respondents--greater value being attributed to schooling by small-firm respondents. The findings shown (next page) in Table 79 by job level and in Table 80 by educational background are mean values, using the weights specified in Table 34 (p. 70)--the higher the mean, the greater the value of schooling. Where Ns are very small among small-firm respondents (as at job levels 1, 2, 5, and 6 in Table 79 and for several of the educational background categories of Table 80), the mean values have uncertain

Table 79

Weighted Mean Judgment of Small-Firm and All-Firm NYC Respondents Of the Dependence of Present-Job Performance on Previous School Training-- By Job Level

Variable	Job Level						Mixed	Total
	1	2	3	4	5	6		
Ns								
Small	0	3	22	13	2	3	13	56
All	113	111	187	105	22	16	33	597
Means								
Small	--	.33	1.68	1.69	2.00	2.33	1.62	1.64
All	1.16	1.26	1.33	1.47	1.53	2.38	1.39	1.35

Table 80

Weighted Mean Judgment of Small-Firm and All-Firm NYC Respondents with Various School Backgrounds Of Their Ability to Perform Their (a) Present Job, (b) First Job, and (c) All Jobs-- Without School Training

Schooling Status	Present Job				First Job				All Jobs			
	Small		All		Small		All		Small		All	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Only high school	20	1.75	196	1.51	17	1.88	146	1.67	17	2.18	146	1.76
HS plus Post-HS	7	2.29	118	1.85	5	2.40	88	1.83	5	2.40	88	2.13
Post-HS only	18	1.83	117	1.61	10	1.80	82	1.43	9	1.78	82	1.68
Total with training	45	1.87	431	1.63	32	1.94	316	1.65	31	2.16	316	1.84
No school training	11	.73	166	.63	3	1.00	83	.64	3	1.00	83	.66
All respondents	56	1.64	597	1.35	35	1.86	597	1.44	34	2.12	597	1.60

reliability, making the direction, not the size, of the difference the focus of interest. The means in the "Total" column of Table 79 place the all-firm respondent closer to "mostly" than to "partly" able to perform his job duties without school training--but the small-firm respondent closer to "partly" than to "mostly." Because of the small Ns for small-firm data, distinctions by job level are more tenuous. The data of Table 80 speak for themselves and require no additional comment on a descriptive level. Explanation of the outcomes is the important matter and appears to lie, as shown next, in differences in journal and ledger activity.

Journal and Ledger Activity. With all-firm journalizing percentages rounded from those of Table 57 (p. 97) and ledger activity taken from Tables 62 and 63 (pp. 102, 103), the percentages of small-firm and all-firm NYC respondents involved in journal and ledger work are displayed in Table 81.

Table 81

Percentage of Small-Firm and All-Firm NYC Respondents Engaged in Journal and Ledger Work

Size	Journal*						Ledger	
	G	S	P	CR	CP	Comb.	Genl.	Subsid.
Small	54	61	50	88	80	29	57.1	42.9
All	41	35	29	53	49	21	36.7	38.4
Diff.	13	26	21	35	31	8	20.4	4.5

*The abbreviations stand, in turn, for: General, Sales, Purchases, Cash Receipts, Cash Payments, and Combination Cash Receipts and Payments.

Taken at their face, the differences in journal and ledger work shown in Table 81 only partly explain the greater value ascribed to schooling by small-firm respondents with various educational backgrounds (Table 80) or job levels (Table 79). Given the frequent telephoning of NYC respondents to unravel apparent contradictions between responses to the general questions about journal and ledger work (Nos. 33-35 on the left side of page 2 of the questionnaire) and responses to the parallel items within the set of 131 detailed job activities--particularly the common omission of number of money columns in journals--the probable explanation of the value-of-schooling differences lies in the Labor Department findings. That is, small-firm em-

ployees are probably using ledger and journal forms very much like those of classical bookkeeping instruction and which invoke the pertinent bookkeeping concepts. That is, he directly applies his school training in full-scale journal and ledger maintenance. In contrast, large-firm employees, as the Labor Department analyses reveal, routinely use unique-to-the-establishment record forms that usually represent portions of journals and ledgers and which require little if any conceptual knowledge of the kind that forms the foundation of school instruction. Accordingly, the value of schooling is judged to be greater by the small-firm employee.

Computerization and Peripheral Job Duties. As a mild indication that firm size, not geography, is the major determinant of bookkeeping job duties, comparable involvement of Upstate establishments and of NYC small establishments in computerized systems was found: in the establishments of 9 of the 59 Upstate respondents and of 6 of the 56 NYC employees of small firms.

The desirability of typing skill is especially evident among small-firm bookkeepers: 82 percent of such NYC persons (Cf., 81% for Upstate respondents, Table 43, p. 83), but 61 percent of all NYC respondents type on the job [Table 43].

Summary

On occasion reinforcing and at other times mildly correcting small-firm information from Upstate respondents, among 56 NYC respondents in establishments with fewer than 10 employees, the findings--in contrast to those from all-firm respondents--show:

1. Slightly larger involvement in job-relevant schooling.

2. More responsible job duties--but, in agreement with all-firm data--increased responsibility with increased schooling, most markedly for post-high school involvement in bookkeeping/accounting courses.

3. Greater involvement in journals and ledgers involving the concepts of classical bookkeeping instruction and, for that reason, greater value assigned to schooling.

4. Near-total absence of employment of persons with less than 2 years of job experience (with 9 percent having less than 3 years of experience); the typical small-firm bookkeeper is 46 years old and has had 14.6 years of experience in the bookkeeping/accounting field.

The last-mentioned finding is the one with the most consequential implications for high school bookkeeping instruction. In the big cities, small employers account for very few employment opportunities (in New York City, for 5 percent of all bookkeeping employment; see Table 23, p. 48), and those employers secure their bookkeeping personnel from the ranks of those who have gained their experience elsewhere. Therefore--

> In the big cities, high school instruction should preferably center around the leading duties of entry-level clerks and accounting clerks in large establishments.

In the smaller cities and towns, there is a somewhat larger incidence of employment of relatively inexperienced persons: In the three small cities in upstate New York, one out of five employees had less than 2 years of job experience and two out of seven had less than 3 years experience [Table 7, p. 29]. The important curricular distinction for high school instruction is this--

> Large-city instruction should be largely devoted to the piecemeal records, requiring little conceptual understanding, that prevail among clerks and accounting clerks; whereas, small-city instruction should deal with full-scale journal and ledger maintenance and the concepts associated with such records.

The substantial engagement in post-high school bookkeeping/accounting courses (19 percent of Upstate respondents [Table 10, p. 33], 39 percent of all NYC respondents [Table 10], 45 percent of small-firm NYC respondents [Table 78, p. 168]) makes apparent that those who feel the need for formal, job-relevant schooling undertake it. It therefore seems appropriate to suggest that in cities of whatever size--

> Preparation for higher-level activities (e.g., financial statements, closing the books, adjusting, reversal, correction entries, and the like) should be left to on-the-job learning and/or post-high school bookkeeping/accounting courses.

Neither from common experience in the world of work nor in the data of this investigation is there the slightest reason to suppose that the high school experience is the dominating factor. Leave to job experience and to post-high school education the roles they can more efficiently play.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

To provide a basis for considering findings and recommendations, the major purposes and procedures of this investigation are first briefly summarized and distinguished from those of earlier inquiries with comparable purposes.

Purposes and Procedures

Earlier studies have shared with this one determination of the job duties of employed bookkeepers for the purposes of curricular revision. Several major features, however, distinguish this study from earlier ones. First, earlier studies have tacitly assumed the need for school training as a basis for employment and have been largely confined to examination of on-the-job activities independent of the employee's educational and job history. In contrast, the present study solicited school and job history information from one of its two major groups of respondents and relates variations in job activities to differences in school and work backgrounds, thereby assessing the need for job-relevant schooling in relation to job duties and providing information across the range of job responsibility from clerk through accountant.

Second, a number of prevailing assumptions about high school training are examined: that it is a step on a career ladder leading to later job advancement; that those with high school training in bookkeeping have an advantage over those without such training in obtaining employment and in being promoted; that executing the job duties of an entry-level position (defined as one available to those without previous job experience in the field) requires an understanding of concepts unique to bookkeeping.

Third, as distinguished from earlier studies that used one or the other technique the present study employed both questionnaire and interview procedures: the first,"playing back" to employed bookkeepers the components of the present high school curriculum in Recordkeeping/Bookkeeping, thereby identifying what is in the curriculum that is also on the job; the second, examining on-the-job activities (particularly those involving computerization) to identify job requirements that are not in the present curriculum.

Via mailed questionnaire, employed bookkeepers were asked whether they performed each of 131 listed activities (high school curriculum items) and, if so, whether they learned to perform the task in school, on the job, or both. The findings of that inquiry are based on a probability sample of the bookkeeping employees of all private employers in New York City, strati-

fied by type and size of establishment (Standard Industrial Classification and total number of employees), leading to responses from 597 employees of 337 New York City employers.[35] Evidence for the representativeness of the sample respondents is given in the Technical Appendix (pp. 209-221) and, for the coverage in the questionnaire of a national curriculum in high school Recordkeeping/Bookkeeping, on pages 11-13 and in Table 83 (pp. 206-208).

The second data-gathering tactic consisted of face-to-face interviews of accounting supervisors in industry (and, when necessary to verify particular details, of their bookkeeping employees), together with analysis of the financial record forms used on the job. That portion of the investigation was conducted at our request by professional occupational analysts of the Occupational Analysis-Industrial Services Unit of the New York State Department of Labor. Interview and records-analysis findings are based on 16 establishments embracing 10 Standard Industrial Classifications (including Government) and covered 63 job titles involving 237 bookkeeping employees. Size of firm ranged from 15 to more than 13,000 employees, for a total of more than 33,000 employees (see Table 71, p. 129). At our particular behest, the Labor Department focussed on entry-level positions[36] (those available to persons without previous job experience) and on the effects of computerization on job duties. In accord with standard Labor Department job analysis protocols, employers' requirements for previous education and particular specialized schooling were also determined.

Taken either together or separately, the questionnaire and interview data appear to be on the largest scale of any inquiry into bookkeeping occupations conducted to date, and its unique elements have been detailed above.

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[35] In addition, in the expectation that big-city, big-firm employment would tend to consist of narrower, more specialized job duties than would be encountered in small-firm, small-city employment, questionnaire data were also secured from a phonebook sample of 59 employees of 56 establishments in three small New York State cities (Auburn, Batavia, Elmira). In the event, it turned out that Upstate inquiry was superfluous. The activities of Upstate bookkeepers were indistinguishable from those of small-firm employees in New York City. In studies like this one, size of establishment, not geography, is the proper major basis for sampling.

[36] Of the total, 52 job titles covering 213 individuals were for entry-level positions, of which 5 titles covering 28 positions required college training--leaving 47 job titles covering 185 positions open to persons with neither college training nor previous work experience in the field. [See Table 72, pp. 131-134.]

Besides the 131 job activities representing the high school curriculum in recordkeeping/bookkeeping, the questionnaire also solicited information on a variety of ancillary or peripheral issues associated with lower-order purposes (e.g., time spent in calculation and in operating business machines, bases for promotion, employers' hiring requirements, employees' opinions of the value of school training for job performance, etc.). In all, the questionnaire findings cover a range of respondents from those with less than 6 months to those with more than 30 years of work experience in the field, from the lowliest clerks to the company's chief financial officer, from those with no job-relevant schooling whatever to college-graduate CPAs, from workers in firms with 0-3 employees to those in establishments with more than 1,000 employees--covering the range of SICs (Standard Industrial Classifications) established by the federal Department of Labor to describe type of employer.

The original intent--and the directive from the funding agency, the New York State Department of Education--was to deal with entry-level positions, and our explanatory cover letter to employers (of 10 or more employees) stressed that interest (see p. 227 and p. 228 for the cover letter to small employers). Nonetheless, for the reasons given under "Development of a Job Code" (pp. 17-18), substantial numbers of questionnaire responses were received from nonentry persons. Taking "Clerk" and "Accounting Clerk" as general titles embracing numerous entry-level positions, about 40 percent of New York City questionnaire respondents held such positions; another third were classified as "Assistant Bookkeepers"; the remainder were at still higher levels of job responsibility (see Table 21, p. 44). Accordingly, our questionnaire findings may be described as resulting from an inquiry into entry-level positions that happened to secure information from higher-level persons as well. In all instances, findings are considered in relation to job level, thereby separating out from the mass of data those applicable to the jobs available to previously inexperienced persons. Especially reflecting small-firm employment, some respondents held 'mixed" positions (nonbookkeeping as well as bookkeeping duties) and were assigned a job level reflecting the complexity of their bookkeeping duties. Across all questionnaire respondents (597 in New York City and 59 Upstate) there were 60 job titles under each of which there were at least two respondents (see pages 41-44).

Major Findings and Inferences

The data of this investigation are displayed in 90 tables covering both major and minor matters. Here, the major, global issues are considered first, together with the supporting data; second-order information is given next. In each instance, bracketed reference is made to the table and page numbers containing the pertinent data, including the more molecular findings not specifically listed in this summary.

Two preliminary observations must be made. First, for the reasons given on page 21, questionnaire data from the 59 Upstate respondents are of uncertain reliability. Inferences about small-firm employment and, in turn, about appropriate high school curricula for such employment are therefore more tentative [see, however, Footnote 34, p. 167, and the next to last paragraph on page 58]. Second, those responsible for high school bookkeeping instruction in the large cities need to consider whether certain characteristics of New York City (hereinafter, NYC) bookkeeping students and instruction also characterize their cities. Specifically, in relatively recent years there has been a substantial shift in the composition of NYC's high school population, reflected by: (a) the offering of a Recordkeeping curriculum (to those not judged capable of learning classical bookkeeping), (b) increasing enrollments in Recordkeeping in relation to those in Bookkeeping [pp. 30-31 and Table 8], (c) a larger proportion of NYC students enrolled in second-year bookkeeping than in the State as a whole [p. 12], and (d) internal evidence suggesting that the second year of high school bookkeeping in NYC goes little beyond what is commonly incorporated into a 1-year curriculum [top of p. 73]. Although the 131 job activities listed in the questionnaire represent a national curriculum, to the extent that the foregoing NYC characteristics apply elsewhere, the findings of the present investigation have special force. At the same time, there are a number of findings so consistent with those of earlier studies as to provide generalizations applicable to all high school instruction aimed at employment in the maintenance and processing of financial records.

Recordkeeping Curricula

Although one-third of NYC enrollments during the 10-year period 1962-1971 were in Recordkeeping [Table 8, p. 31], only 4 percent of NYC questionnaire respondents had been Recordkeeping students [Table 9, p. 32]. Furthermore, such students among our NYC respondents held jobs at substantially lower

levels of job responsibility than did those with other school backgrounds.[37] Although there is nothing to suggest that Recordkeeping students are not obtaining employment, they are manifestly seldom employed directly in the occupational field of their high school course of study; even when they are so employed, they tend to hold relatively low-level jobs. To argue that Recordkeeping instruction contributes to some portion of duties in other occupational fields is to beg the question--for "General Clerical" programs and "Clerical (or Office) Practice" courses have that function. Recordkeeping should contribute something unique to readiness for employment in the maintenance and processing of financial records and to the obtaining of such employment.

The Recordkeeping curriculum appears to be nonfunctional--at least, it is not achieving its purported major objectives for the kinds of students enrolled in that course of study in the New York City high schools. Suggestions for restructuring of curricula are given later in this summary, following citation of other major findings relevant to the issue.

Data Processing Curricula

New York State (and City) data-processing supplements to the syllabus in bookkeeping/accounting are confined to general concepts (How to read a punch card, a flow chart, etc.), without "hands on" practice involving punch-card decks, coding or input sheets, computer printouts, etc. Footnote 2 (p. 5) reports the general tenor of questionnaire findings on the involvement of bookkeeping personnel in data processing, and details are shown as Activities 116-125 in Tables 67 and 68 (pp. 114 and 120). As a group, those activities are the only ones more frequently carried out by low-level than by higher-level employees [p. 124]. They are purely clerical tasks, quite independent of the conceptual understandings purveyed in high school data processing curricula and readily learned on the job. Indeed, a large proportion of our questionnaire respondents were graduated from high school before the establishment of data processing curricula in the high schools of New York City,

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[37] Reported here (but not in earlier tables) is that on a 6-level job responsibility scale (1 = clerk, . . ., 6 = senior accountant; see Table 21, p. 44, and Table 1, p. 19), the average (mean) job level for those with no high school training in Recordkeeping or Bookkeeping is 2.92 (N = 283); for 24 Recordkeeping students the mean is 2.29; and for 290 Bookkeeping students, 2.52. The foregoing data are irrespective of status with respect to post-high school, job-relevant schooling.

and they engage in data processing job duties of the kind described in activities 116-125 without having had earlier school instruction. The possible value of high school data processing instruction for persons other than potential bookkeepers is outside the province of the present study; but for potential bookkeepers, the instruction prescribed in the State and City data-processing supplements to the bookkeeping syllabus makes no discernible necessary contribution.

High School Bookkeeping Curricula

For a swift, rather than diffuse, perspective providing a basis for curricular recommendations, a number of the major findings are briefly given; then inferences are drawn.

Job-Relevant Schooling. Nearly half the 597 NYC respondents and two-fifths of the Upstate respondents to the questionnaire had no high school training pertinent to bookkeeping employment [Table 9, p. 32]. Post-high school bookkeeping/accounting courses were taken with equal frequency by those with and without prior high school instruction [Table 11, p. 34]--although less often by Upstate than by NYC respondents [Cf. Table 12, p. 35]. Among all 597 NYC questionnaire respondents (Upstate data are too skimpy to justify reporting), total job-relevant schooling is distributed as follows [Table 13, p. 35]: None (28%), Only in high school (33%), Only post-high school (20%), Both in high school and post-high school (20%).

The foregoing data make apparent that bookkeeping occupations are not ones that uniformly require prior high school training, nor is such training (as contrasted with its absence) a particular stimulus for further schooling after high school.

Job Responsibility in Relation to Schooling and Experience. Using the 6-step job-level scale (see Table 21, p. 44, in relation to Table 1, p. 19), there is nothing to choose between the levels of job responsibility attained by those with no job-relevant schooling whatever and those with only high school training [Table 24, p. 50, for NYC data], although modest differences in favor of schooling prevail Upstate [Table 27, p. 55]. Furthermore (for NYC respondents only, because too few Upstate respondents undertook post-high school education to provide reliable information), post-high school education is the important determinant of job responsibility; for the four schooling groups, the average (mean) job levels (in parentheses) are: Post-high

high school only (3.44), High school plus post-high school (2.92), None (2.54), High school only (2.52) [Table 24, p. 50]. Also, level of job responsibility increases with increase in number of post-high school bookkeeping/accounting courses [Table 25, p. 52]. Finally, both for NYC and Upstate employees, job responsibility increases with amount of work experience in the field, regardless of schooling status [Tables 24 and 28, pp. 50 and 56].

The foregoing data demonstrate that level of job responsibility in bookkeeping/accounting occupations is largely dependent on amount of work experience and on job-relevant, post-high school education--not on high school bookkeeping instruction.

Differences in general ability, maturity, and motivation probably account for the outcomes given above. Those in the "None" and in the "Post-high school only" schooling categories were presumably academic majors in high school--the brighter students [see Footnote 24, p. 67]. The academic-major "None" employees readily learn to carry out their job duties on the job, and they further demonstrate their intellectual advantages over the high school bookkeeping student when they undertake post-high school, job-relevant courses.

Greater maturity is a second factor that, by definition, distinguishes the student still in high school from the one who has completed high school. Third, motivational differences distinguish the high school student from the employed person. Both factors are implicit in our finding that those who feel the need for post-high school, job-relevant schooling undertake it, whatever their high school background. Consider, too, that the high school student elects the study of bookkeeping from a relatively small number of curricular options, not necessarily with informed and definite intent to work in that field--whereas, the employee in that field has stronger motivation and acts accordingly.

The foregoing explanations aside, from the obtaining and retaining of bookkeeping occupations among those without directly pertinent schooling, the need for school training seems questionable. On that issue, the findings on employers' requirements for school training and on employees' judgments of the value of school training are given in the next subsection of this summary; and the dependence of entry-level jobs on understanding of concepts unique to bookkeeping is discussed in the subsection after that.

First, however, some might feel that high school recordkeeping/bookkeeping students like those of New York City's schools could not otherwise ob-

tain bookkeeping employment. That interesting supposition will be considered later in this summary.

Employers' Requirements and Employees' Judgments Concerning Schooling. The characteristic entry-level positions are those subsumed under the general titles "Clerk" (Level 1) and "Accounting Clerk" (Level 2). Among NYC questionnaire respondents, one-third of those whose first jobs in the field were as clerks and a little less than half of the first-job accounting clerks reported that their first employer required previous school training [Table 38, p. 75]. These are persons, it should be remembered, whose total job experience ranges up to more than 30 years, often long preceding computerization of financial records--a factor, as will be shown later, that significantly affects employers' requirements. On their current jobs (the first job in the field among one-third of the NYC respondents), employers required previous schooling of one-sixth of the clerks and one-third of the accounting clerks; whereas previous job experience was required by the employers of one-third of the clerks and half the accounting clerks [Table 39, p. 77].

The Labor Department interview findings on schooling requirements are greatly more pointed and pertinent--because the information came directly from employers and applies with zero ambiguity to entry-level jobs in often-computerized financial record systems. For only 22 percent of the entry-level job titles (covering 13 percent of the entry-level employees) was high school bookkeeping (or mathematics) "required"; for another 10 percent of the titles (covering 4 percent of the employees), high school bookkeeping was "preferred or helpful" but not required [Table 74, p. 136].

What about employees' judgments of the value of schooling for carrying out their job duties and for advancement in the field? Detailed findings among respondents at various levels of job responsibility and with various school backgrounds are given in Tables 33-37 [pp. 68-75, passim] and are summarized at the top of page 72. Briefly, those without school training assign negligible value to it; those with school training, moderate value. Schooling was judged to have lesser value for entry-level jobs than for more advanced ones; and post-high school training is the consequential schooling.

Two-thirds of the respondents judged promotion to be based mostly on job experience and performance, about 5 percent on schooling, and more than one-fourth on job performance and schooling equally [Table 32, p. 65]--the suppositions of educators about the value of schooling notwithstanding.

Duties of Entry-Level Employees. As described earlier, questionnaire data on job duties arise from a playback of high school curriculum components to employees, whereas interview data arise from first-hand examination of the duties of employed persons and, for that reason, must be considered more reliable in instances of disagreement between the two sources of data. Often, the questionnaire and interview data are in excellent agreement. When they are not, as will be documented, the lesser credibility of the questionnaire findings is nearly always due to one or the other of two characteristics: (1) The terminology of the questionnaire job activities is the correct, classical terminology of bookkeeping/accounting, whereas on-the-job terminology is often loose and has meanings at variance with the technically correct ones; (2) The wording of the questionnaire job activities is predicated on manual records, substantially failing to capture the gross changes in job duties occasioned by computerization--the ones revealed by the interview data.

An instance of the first kind is described on page 45: Beginning employees rarely take a trial balance of the books (the meaning intended by Questionnaire Activity No. 88); instead, they balance local accounts for comparison with the books. "Posting" is another abused term: As represented in many questionnaire activities, its intended meaning was the correct one involving both debit and credit; whereas, in computerized systems the term often applies to one or the other half of the correct meaning. Indeed, the latter instance illustrates the major effect of computerization on job duties: The entry-level employee has extremely narrow job duties consisting of a piece of a piece of a piece of an entire accounting operation, often using record forms that have little resemblance to those of high school instruction and that seldom require an understanding of concepts unique to bookkeeping/accounting [see pp. 138-164]. Details follow.

Among 131 job activities (covering 13 topical "areas") listed in the questionnaire, the typical "Clerk" engages in 7 activities confined to 2 or 3 areas; the typical "Accounting Clerk" engages in 14 activities confined to 4 areas [Table 65 and p. 108].

Journalizing is rare among entry-level persons--from .7 to 11 percent of such persons, varying with the journal [Table 56, p. 96, and Table 76, p. 144]. Work with the General and with Subsidiary Ledgers is even more rare among beginners [pp. 102-104 and Table 76, p. 144]. Furthermore, as

mentioned above, much so-called journal and ledger work invokes only a portion of what is meant by those terms in classical usage.

The percentage of all NYC respondents engaged in each of the 131 job activities is given in the last column of Table 68 [pp. 116-120] and of those holding entry-level jobs (clerk and accounting clerk) in Table 82 [pp. 202-206]. Because of the gross variances in terminology (e.g., see pp. 93-94 for the concept of "journalizing"), the questionnaire findings do not permit inferring the relevance of "double entry" as a concept applicable to job duties. On that issue the interview findings are precise: The central and dominating bookkeeping concept of double entry applies to little more than one-third of the entry-level job titles held by half the entry-level workers [Table 76, p. 144].

Both the questionnaire and the interview findings demonstrate the rarity among entry-level employees of: (1) balancing and closing the books, (2) reconciling subsidiary ledger with general ledger accounts, (3) preparing of a balance sheet or profit and loss statement or trial balance, (4) making adjusting, reversal or correction entries [Tables 76 and 82, pp. 144 and 202-206]. Still other rarities are mentioned on page 121 and itemized in Table 82.

Overwhelmingly evident is that the high school bookkeeping curriculum extends far beyond what employers require or appreciate among applicants for entry-level positions and equally far beyond the actual duties of beginners. Curricular revision in better keeping with the employment facts is suggested later in this summary.

Where Job Duties Were Learned. For each of the 131 job duties performed, the respondent was asked to show whether he learned to perform that duty in school, on the job, or both in school and on the job. Confined to the 196 NYC respondents with "Only High School" training in recordkeeping/bookkeeping and excluding the 12 job activities not in the high school curriculum [details in Table 67, pp. 110-114], for each of the remaining 119 job activities the percentage of respondents who reported on-the-job learning greatly exceeded the sum of those who reported school or school-plus-job learning. For the distribution of 119 activities, the median percentages were: School (6%), Job (72%), Both (8%), Undecided, i.e., no response, (11%). The middle 90 percent of activities embraced the following ranges of percentages of persons reporting where they learned the activity: School (0-22%), Job (46-90%), Both (0-23%), Undecided (0-24%).

The startling infrequency of "learned it in school" among persons who perform the activity on the job and for whom the activity was included in their high school training demonstrates that there has been little transfer of school learning to job performance--a matter discussed on pages 114-115, including a suggestion for remedying the state of affairs.

Computerization

Among Labor Department interviewees (across both entry and nonentry positions and across all previous schooling requirements), 38 of the 63 job titles (60%), covering 157 of the 237 individuals (66%), employed in 11 of the 16 establishments (69%), were involved at least in part in computerized accounting systems [Table 72, pp. 131-134 and pp. 139-140]. Among NYC questionnaire respondents, the employers of five-eighths of them were so involved--increasing sharply from one-tenth of the respondents employed in establishments with 0-3 employees to more than seven-eighths of the respondents employed in establishments with more than 1,000 employees [Table 49, p. 88]. "Payroll" was the most frequently computerized area (78%), "Purchases" the least (32%) [details in Tables 51 and 52, pp. 90-91].

Judgments by accounting supervisors and Labor Department occupational analysts of the effects of computerization on "need to know" bookkeeping concepts (in contrast to the requirements under manual systems) showed more instances of unchanged needs than of reduced needs, with no instances of increased need for conceptual understandings [Table 72, pp. 131-134, and p. 139]. These judgments, however, do not mean what they might seem to mean. As mentioned earlier, for one thing, entry-level jobs tend to have little conceptual content; for another, the very design of the record forms associated with computerized systems [see pp. 146-164] makes the concepts associated with them of a rather different order from those associated with manual records. One leading instance was mentioned earlier: comparison of local account balances <u>with</u> the books, rather than a trial balance <u>of</u> the books. Another pervasive, across-the-board generalization was stated by the Labor Department occupational analysts as: "In general, computerization reduces the posting elements of the work and increases the balancing and checking functions" (p. 140). With "double entry" the fundamental concept from which much else in accounting flows and which is directly invoked in the maintenance of ledger accounts, the effects of computerization on

posting to accounts supports the propriety of the summary conclusion that computerization substantially reduces the need to understand the concepts of classical bookkeeping in order to carry out entry-level job activities.

Accounting supervisors judge educational requirements to be essentially little affected by computerization; but the actual design of computerized record forms and its effect on job duties contradict their armchair opinions (p. 141). As displayed in Table 72 (pp. 131-134), they hire those with neither previous experience nor previous school training in bookkeeping, and on-the-job training of a few days to a few months meets their personnel needs. In short, the opinions of accounting supervisors in industry are at variance with their actual behavior.

The foregoing employment policy and practice reveal the modest incidence of a requirement for prior school training in order to secure employment and suggest that entry-level job duties are often essentially clerical, with nominal dependence on concepts unique to bookkeeping. Both phenomena probably arise in some part from the dizzying variety of record forms unique to the establishment and to each job title within establishments. Plainly, employers turn novices into functioning employees in a few days to a few months.

The foregoing employer practices, however, are ones identified mostly among large employers. Small-firm findings are summarized next.

Small-Firm Employment

The data on small-firm employment are based on 59 employees of 56 establishments in three small Upstate cities and on 56 employees of 52 small employers in New York City (fewer than 10 employees per establishment). Detailed Upstate findings are given throughout this report and on NYC small-firm respondents on pages 165-172. Summarizing here:

The small-firm employee does tend to engage in a wider range of job duties than does the large-firm employee and is more often engaged in the maintenance of journals and ledgers like those of classical bookkeeping instruction--perhaps in large part because of the infrequent computerization of small-firm accounting records [Table 81, p. 170, and Table 49, p. 88]. Trial balance preparation is also more frequent among Upstate respondents (42.4%) than among NYC employees (24.8%)--the latter percentage applying to all 597 NYC respondents in establishments of all sizes. In general, classical manual bookkeeping prevails among small employers.

Surely because of the greater correspondence of their job duties to school instruction predicated on manual financial records, small-firm employees value formal schooling somewhat more highly: in New York City, at 1.64 (vs. 1.35), where 1.00 = "mostly" able to perform one's present job duties without school instruction and 2.00 = "partly" able . . . [Table 79, p. 169]. Among Upstate vs. all NYC respondents [Tables 34 and 35, pp. 70, 71], schooling is valued about equally for "present" job and "all jobs" in the bookkeeping field, but more highly among NYC than among Upstate respondents for "first job" in the field. The explanation for the latter finding appears to lie in the greater involvement of NYC employees in post-high school bookkeeping/accounting courses [Table 13, p. 35], which was, for many, their only job-relevant schooling [Table 11, p. 34]. Here and throughout, it is post-high school bookkeeping/accounting courses, not high school bookkeeping instruction, that is most highly valued [Table 34, p. 70, and Table 80, p. 169] and that is associated with the highest levels of job responsibility [Tables 24 and 28, pp. 50, 56].

The principal characteristic that explains the higher job levels of small-firm than of all-firm NYC employees (means of 3.36 and 2.78) and that has implications for high school bookkeeping curricula in big cities is that the small-firm employee is overwhelmingly a highly experienced person--typically 46 years old, with 14.6 years of job experience--only 9 percent had less than 3 years of work experience in the field [Table 77, p. 166]. Manifestly, the small employer in the big cities secures his bookkeeping personnel from among those who have gained pertinent work experience elsewhere; he does not hire the new high school graduate. For that reason, as well as because small-firm employment accounts for a negligible proportion of all employment opportunities in big cities--less than 5 percent in New York City [Table 23, p. 46]--no defensible case can be made for orienting big-city high school bookkeeping instruction around the classical bookkeeping concepts associated with the manual accounting systems of small-firm employment. If and when the need for such instruction arises, when it is not acquired on the job, it is available in post-high school institutions: 39 percent of all NYC respondents undertook such post-high school instruction, equally divided between those with and without prior high school instruction [Table 11, p. 34].

Upstate (i.e., in the small cities), on the other hand, the findings and the inferences are less clear. From total job tenure Upstate about equal to that of all 597 NYC employees (5-9 years), one must infer less reluctance to

hire the new high school graduate. For one thing, however, fewer Upstate respondents undertook post-high school courses and more of them (than in NYC) had no school training in bookkeeping [Table 13, p. 35]. Even more provocative, the Upstate employee is typically 40 years old; only one-eighth of them are younger than 24 [Table 5, p. 27]. From that fact alone, it seems rather doubtful that the small-city employee is given advanced responsibilities at the start of employment.

Thus, although a clear case can be made for a focus on classical bookkeeping concepts associated with manual accounting systems in small-city high school instruction, this is not to say that the beginner's job responsibilities go much if at all beyond journalizing and posting.

Another insight into the relevance of school training for small-firm employment is an employer's requirement for previous schooling for "first job" among three-eighths of the Upstate respondents [p. 76], but among 22 percent of the "present job" holders [Table 39, p. 77]. In New York City, small-firm respondents were no more often than all-firm respondents (one-third of them) required by their present employers to have job-relevant schooling; whereas more than 11 out of 20 were required to have previous job experience [p. 168]. For small-firm employment, previous schooling is a minority requirement; experience is clearly the primary factor.

Job Duties That Discriminate Novice from Advanced Employees

In the light of the findings and the inferences from them thus far summarized, it should be apparent that work experience and post-high school, job-relevant schooling are the primary determinants of job duties. With initial employment the dominating objective of high school bookkeeping instruction, two bases for identifying elements in the present high school curriculum that are superfluous seem pertinent: (1) duties distinctly more often engaged in by those with than without post-high school courses and (2) those distinctly more often carried out by higher-level than by lower-level employees. The former activities are identifiable from Table 68 (pp. 116-120) and are pinpointed on pages 121 and 182. The latter activities--in excellent agreement with those identifiable from Table 68--are among those listed in appendix Table 82(pp. 202-206) and are given, grouped by "size of difference," on pages 124-125. Briefly and somewhat grossly, the activities superfluous to high school instruction are those that go beyond journal and ledger maintenance. Especially reinforcing of that conclusion--indeed, an even more pow-

erful basis for it than the questionnaire findings--are the interview results displayed in Table 76 (p. 144) for entry-level positions. They show how infrequently the beginner is assigned to job activities beyond simple journalizing and posting. Moreover, in the large firms from which the bulk of interview data was secured, the journalizing and so-called posting activities are often not those of classical bookkeeping instruction [see pp. 146-164], but instead, only half the time dependent on double-entry concepts [Table 76]. For small-firm employment (i.e., small-city high school bookkeeping instruction), on the other hand, the classical journalizing and posting activities are applicable [see pp. 170-171].

Other Features of Bookkeeping Employment

The typical NYC bookkeeper devotes more than 90 percent of his time to bookkeeping duties, the small-city bookkeeper about 75 percent (because many hold job titles embracing more than bookkeeping, e.g., secretary/bookkeeper); the entry-level person, however, tends to have duties outside bookkeeping and averages 75 percent of his time on bookkeeping duties [Table 42, p. 82].

Three-fifths of NYC respondents and four-fifths of Upstate and of small-firm NYC respondents include typing in their job activities, typically for 4½ to 7 hours per week [pp. 83-84]. The particular typing activities of bookkeepers are more or less those of typical typewriting instruction [Table 45, p. 85].

Practically everyone computes, typically by adding machine or desk calculator and typically devoting about 15-18 hours per week to computation; however, only for keypunch and bookkeeping machine operation is prior school training desired by employers [pp. 85-88, 91-92].

Largely reflecting the bases on which job levels were assigned to respondents, journalizing is relatively infrequent among all respondents below the level of assistant bookkeeper [Tables 56 and 57, pp. 96, 97]. Also, in New York City [Table 55, p. 94]--if not among small-firm Upstate respondents [p. 97]--some of the special journals are more common than the General Journal. Number of money columns in journals varies so widely as to preclude identification of any prevailing number of columns [pp. 99-102].

Three-eighths of NYC respondents and five-eighths of Upstate respondents are involved in General Ledger work, less often among recent than among older high school graduates [Table 62, p. 102]. Three-eighths of NYC respondents

and about one-third of Upstate respondents maintain subsidiary ledgers--again, more often by older than by recent high school graduates [Table 63, p. 103]. Even for the most fundamental of accounting records (journals and ledgers), the tendency among employers is to entrust such activities to those of their employees who have acquired at least some job experience. Mainly because of the loose and technically incorrect usage of the terms "journal" and "ledger" often found among questionnaire respondents, the interview findings are more accurate on the question of journal and ledger work. They show a fourth of entry-level persons engaged in journalizing and one-fifth in ledger work [Table 76, p. 144]--among the large-firm employees that account for most of the interview data.

Particularly evident is the extent to which the high-frequency (daily) activities are engaged in by persons at all job levels; the high-level persons are by no means free of the myriad of relatively petty activities that antedate periodic closing of the books and preparation of summary records [pp. 124-125].

Finally, an ad hoc classification of the 131 job activities of the questionnaire (by one of the consultants to this study) identified only 39 of them (30%) as requiring understanding of concepts unique to bookkeeping. The remaining 92 activities were judged to consist of understandings of business operations, purely clerical tasks with no conceptual content unique to bookkeeping, and clerical tasks involving bookkeeping concepts but which can be executed without understanding those concepts [p. 127]. Such a classification is very much in keeping with employees' questionnaire responses and with the Labor Department interview findings.

Summary

With occasional minor exceptions (viz., number of money columns in journals, uncertain reliability of Upstate findings on the more consequential job duties leading to probable overestimation of the sophistication of small-firm job duties), the findings of this investigation have striking internal consistency. Epitomizing the myriad of detailed findings in one major generalization--

> Only a modest portion of the activities of entry-level bookkeepers appear to require an understanding of concepts particular to the maintenance of financial records, and the applicable concepts are substantially more modest than those that prevail in high school bookkeeping instruction in this country.

In support of that overarching inference, consider that--

1. Nearly two-sevenths (of NYC) employees and nearly one-third of Upstate (small-firm) employees have had no school instruction in bookkeeping/accounting whatever--yet achieve levels of job responsibility equalling or nearly equalling those of employees who studied bookkeeping in high school. [Probably, these are the academic majors in high school.]

2. Accounting supervisors in industry require previous school training for little more than one-fifth of entry-level positions, and they convert beginners into functioning employees in a few days to a few months of on-the-job training--targeted at the unique-to-the-establishment record forms of each employer. Among questionnaire respondents, an employer's requirement for previous schooling in bookkeeping for one's first job in the field applied to less than half the employees.

3. Questionnaire respondents judge themselves to be approximately halfway between "mostly" and "partly" able to perform their first jobs in bookkeeping and their present jobs in the field without school training. Furthermore, they overwhelmingly attribute promotion to job experience and performance, not to job-relevant schooling. Indeed, the prominent effect of schooling is for post-high school bookkeeping/accounting courses, not high school instruction.

4. Computerized accounting systems overwhelmingly prevail among the larger employers, and the clear effect of computerization is to reduce the need for conceptual understanding.

5. Job duties above the level of journal and ledger maintenance are nearly nonexistent among beginning employees. Activities associated with closing the books, with reconciling subsidiary ledger with general ledger accounts, and with the concepts intrinsic to adjusting, correction and reversal entries are overwhelmingly carried out by highly experienced persons, not by beginners. Even the central concept of double entry was found to be applicable within the activities of only half the entry-level job holders.

6. For the activities performed on the job by those whose job-relevant schooling is confined to high school bookkeeping (as represented by the 131 curriculum-derived job duties of the questionnnaire), on-the-job learning is prevailingly given as the source of the ability to perform the task. Much less frequently is the activity recognized as one that had been covered (at least, in principle) in school instruction or both in school and on the job.

These summary findings make apparent that--

Job-relevant schooling is not a majority requirement for obtaining one's first job in the bookkeeping field. In addition, job responsibility and advancement are heavily dependent on job experience and performance and on post-high school bookkeeping/accounting courses--not on high school bookkeeping instruction.

Bases for Recommendations

There are several considerations that are, strictly speaking, not part of the findings of this investigation, but that are nonetheless a vital foundation for the curricular recommendations that conclude this report. In some instances those considerations are matters of educational philosophy that become pertinent because of the various rationales for high school bookkeeping instruction advanced by those responsible for designing and conducting that instruction (as given on pages 1-2 of this report and as represented by some of the "Major Purposes" enumerated on pages 7-9). Very often, the findings of this investigation provide a test for those philosophies or rationales.

Quickly dispensing of one of the more minor suppositions, the finding of approximately equal involvement in job-relevant, post-high school courses among those with and without high school bookkeeping in their background suggests that high school study of bookkeeping is not a particular stimulus for further study. Instead, it is job requirements--regardless of prior schooling--that appear to stimulate the undertaking of post-high school bookkeeping/accounting courses.

Concerning the complaints of business teachers for half a century that the business subjects have been made a "dumping ground" for low-ability students--verified by the finding of lesser academic intelligence among such students--what of the supposition that such students could not, without high school instruction, obtain jobs in the bookkeeping field? Whether that supposition is sound or, instead, a rationale for maintence of the status quo is beside the point--for it is not a testable hypothesis. Testing it would require the impossible: the denying of high school instruction in bookkeeping to a random half of all those who apply for it and, subsequent to high school graduation, looking into the occupations of the two groups of graduates. Even were it possible to conduct such an inquiry, the proper criterion for the "denied" group would be employment, not necessarily employment in bookkeeping occupations. The result would be to leave the question still

largely unanswered. It is surely more sensible to rely on the reported empirical findings of studies like this one (in excellent agreement with earlier studies with comparable purposes) than on idle (i.e., untestable) suppositions.

Another feature of conventional philosophy--perhaps the central one--is implicit if not explicit in the extending of high school bookkeeping instruction into such higher-order matters as closing the books and associated activities. One would infer that that curriculum characteristic is considered a necessary basis for job advancement if not for initial employment. Why anyone should imagine that the high school experience is the dominating one for one's later occupational history surpasses understanding. Why not leave to the high schools their unargued primary objective of preparation for initial employment and to later events (job experience and post-high school education) preparation for job advancement? As the findings of this investigation lavishly demonstrate, one's job duties in bookkeeping/accounting occupations and advancement in that field depend, variously and jointly, on job experience and post-high school bookkeeping/accounting courses--not, discernibly, on one's high school background.

Another factor, particular to New York City but which may have parallels in other big cities, is sometimes argued by persons responsible for high school bookkeeping instruction. Such persons point to the many classified advertisements for manual bookkeepers, at relatively substantial salaries, presumably for the garment industry, New York City's largest industry. However, our own data and the population file of all New York City private employers maintained by the New York State Department of Commerce [see Table 23, p. 48, for summary data] strongly suggest that the garment industry's need for manual bookkeepers is swamped by the needs for low-level persons among the large, computerized employers. To put all high school bookkeeping students through a curriculum pertinent to a small percentage of all employment opportunities hardly seems defensible. Such needs would have to be satisfied, jointly, by on-the-job learning and by one or two pertinent post-high school bookkeeping/accounting courses undertaken by those initially employed in such firms at levels of job responsibility below that of full-charge (manual) bookkeeper.

Garment industry firms, by the way, are probably not "small" (as defined

in this investigation by the arbitrary cutoff point of "fewer than 10 employees"). Instead, presumably most of their workers are production, not office employees. What of "small" employers, few of whom, according to the findings of this investigation, have computerized any portion of their financial record maintenance and whose books are manual ones? Again, one can only point to the very small percentage of total employment opportunities among such employers [Table 23, p. 48] and ask whether all high school bookkeeping students should be led through a curriculum pertinent to relatively few jobs--in the big cities.

Another consideration prefatory to making curricular recommendations is the reported preference among bookkeeping teachers for the "balance sheet approach" over the "journal approach"--the bird's eye view to the worm's eye view (Devine, 1962). That preference has its own defensible, intrinsic logic; but perhaps part of its appeal to teachers is emotionally based--associated, as that preference is, with the greater prestige of an accounting than of a bookkeeping point of view. Also possible is that the confining of high school bookkeeping instruction to more modest job duties--as the data of this and earlier investigations clearly support--reduces the prestige of bookkeeping instruction in the eyes of those responsible for it. The reference here is to damage to self-image and possible ensuing reluctance of teachers to adopt a different curriculum in better accord with employment needs. In that connection, two points may be made--the first, self-evident; the second, perhaps not so evident. First, schools exist for students, not for teachers. Second, the balance sheet approach is essentially deductive, whereas the inductive processes that attend a journal approach are equally applicable and, indeed, more "natural." That is, much learning, notably among children, is inductive: generalizations are formed from particulars, the latter occurring first in time.

In short, and as a leading prefatory basis for curricular modifications, it is by no means suggested that high school bookkeeping instruction consist of "monkey see, monkey do" activities, without conceptual foundation (even though much entry-level employment has more than a little of that character). Instead, more modest curricular objectives and, following necessarily therefrom, an inductive treatment of the applicable bookkeeping concepts appear to be strongly indicated by the findings of this and earlier investigations.

Finally, there are the rampant job dissatisfaction and high turnover rates among persons overtrained for their actual job duties, as reported by such critics as Ivar Berg (1970). May it not be that the high school student who completes the conventional bookkeeping curriculum is led to wrong expectations of his early job duties and, upon employment, to disappointment and damage to morale. More recent observers--of manufacturing employment--have argued for reversing the one-act character of assembly-line production methods in favor of giving small crews of employees wider responsibilities. The possible viability of such a reversal remains to be determined. For financial record maintenance, however, the tide of computerization is probably one that no King Canute can stop. May it not therefore be in closer keeping with the facts of bookkeeping employment to provide a high school curriculum more closely attuned to initial job duties and leave to job experience and later schooling the functions they are better able to serve?

Recommendations for High School Recordkeeping/Bookkeeping Curricula

The principal curricular distinction is between large-city and small-city instruction--that is, between the computerized systems of the larger employers and the manual systems of small establishments. Even here, however, it is important to make local inquiry--not only of employee distributions by size of firm (as in Table 23, p. 48), but also of the mobility of high school graduates. Do small-city persons stay there or, instead, seek employment in larger cities? Or, conceivably, does some one very large, computerized employer dominate employment in a particular small city?

In other words, it may be that the extreme concentration of employment opportunities in relatively small numbers of large establishments characteristic of New York City may be less in evidence in other large cities. For determining what the employment distributions may be, New York State's Department of Commerce surely has its counterparts in other States, of whom inquiry may be made by the State Department of Education or other agency. The decennial census reports and the interim reports of other State and federal agencies (e.g., Bureau of Labor Statistics, State and federal Employment Service(s), et al.) also contain much pertinent information. At a minimum and far short of further inquiry in depth, curriculum specialists could then estimate the extent of desirable instructional orientation toward computerized and manual accounting systems.

Recommendation 1. As a major basis for high school bookkeeping curricula in big cities, solicit employment distributions by size (and, if desired, by type) of establishment from the pertinent State and/or federal agencies.

The recommended action is a necessary but possibly, sometimes, not a sufficient one. That is, it is a first step, quickly accomplished at no or nominal dollar cost. Although the findings of the present investigation suggest that computerization varies with size, not type, of establishment, should it be suspected that, in a given large city, the large firms less often have the "paper work" characteristic of many New York City large employers, additional inquiry into computerization should preferably be conducted. [The class intervals for size of firm (Table 23, p. 48), by the way, are by no means the only possible ones; they are particular to this investigation and could differ elsewhere.]

A second line of inquiry and applicable recommendation follow from the overwhelming evidence in the present study of sharp differences between the terminology and record forms of classical bookkeeping instruction and those of computerized accounting systems. Nearly all instances of omitted or contradictory questionnaire responses that had to be resolved by telephone discussion with the respondent, as well as nearly all instances of differences between questionnaire and interview findings, lay in differences in terminology and in record forms--differences that make apparent that high school bookkeeping instruction has not been in close touch with the actual job practices in computerized accounting systems. The varying meanings and record forms associated with journalizing, posting, and the trial balance are leading examples.

Focussing on fundamental bookkeeping/accounting concepts (illustrated and implemented by the record forms of manual bookkeeping systems), and making only passing and vague mention of varying modes of implementing those conceptshave clearly not been successful--nor could such tactics be expected to be; for they seriously violate the conditions for the transfer of behavior from one situation to another (i.e., from school to job). Required is as close as possible á match between school and job terminology and record forms. Probably, one should move from lavish use of the varied on-the-job terms and forms to the inducing therefrom of the underlying concepts--not, as in traditional instruction, from classical concepts illustrated by manual record forms, followed by vague and unspecified mention of on-the-job

variations. Transfer of concepts requires lavish illustration; it does not occur otherwise.

> Recommendation 2. Introduce in large-city instruction the terminology and record forms used on the job and use them as the basis to build inductively toward a grasp of the underlying bookkeeping concepts.

The foregoing recommendation is easily made, but not easy to execute because it poses substantial record-form problems. The forms of pages 146-161 are a small sample of the many hundreds of unique forms collected from only 16 different establishments for the purposes of the present investigation.[38] However, even they provide at least a beginning example of on-the-job varieties. However, subject-matter experts should have little difficulty in selecting (from the full set of forms; see Footnote 38) a few that illustrate each of such variations as: only debit entries, only credit entries, full double entries, etc. Actually, the task is one for authors and publishers of instructional materials and record forms for high school bookkeeping instruction aimed at employment in the computerized accounting operations of large establishments.

The recommendation for inductive teaching, by the way, should be no means be taken as an absolute. Many opportunities to work from the concept to the particulars will occur--so that going back and forth between deductive and inductive teaching will often be convenient, economical, and efficient. In either instance, lavish illustration of variations in terminology and in record forms is a "must." Of course, as concepts begin to take hold because they have been illustrated in sufficient variety, it will be progressively less necessary to provide illustrations--at least, fewer illustrations will be found to be needed.

Recommendation No. 2 implies important distinctions between instruction for employment in computerized versus manual bookkeeping systems. Whether different textbooks for the two kinds of instruction might be called for is a question for authors and publishers.

The two recommendations thus far made bear on determining whether the focus should be on employment in computerized bookkeeping/accounting operations and, if so, what mode of implementation seems indicated.

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[38] The full set of record forms collected by the Labor Department for this investigation are on deposit with the Bureau of Business and Distributive Education of the New York State Education Department.

Recommended Ceilings for High School Instruction

The findings of the present investigation are in total agreement with those of the earlier studies by Luxner and by Lanham, et al. (see pp. 2-3) in identifying job activities definitely beyond the pale of high school instruction--beyond what employers expect or need from beginning employees. The findings of this investigation make apparent, in addition, that the high schools are not the viable locus of instruction in higher-order duties, that they are most efficiently learned later on. The findings on entry-level job duties of this investigation strongly suggest--

> Recommendation 3. Big-city instruction for employment in computerized bookkeeping/accounting systems should stop with journalizing and posting, whereas small-city instruction for manual bookkeeping employment should perhaps extend as far as the trial balance--but no further. The focus should be on initial entries in books of original entry, without extending to financial statements, to adjustment, correction, or reversal entries or to reconciling subsidiary ledgers with the general ledger. Such duties strongly tend to be entrusted by employers only to experienced employees.

The preceding recommendation applies to the typical big-city or small-city bookkeeping student. There can be no objection to more sophisticated instruction offered to exceptionally able students--although it seems rather doubtful that employers will assign more responsible duties to such persons at the outset. They might, however, advance more rapidly.

Design of High School Instructional Sequences

The conventional curriculum no doubt covers the bookkeeping concepts applicable to initial employment under any of the common entry-level job titles. Partly in view of the preceding recommendation for a more modest curriculum and partly to tie instruction more tightly to the clusters of job duties associated with the leading entry-level job titles, it is worth considering the possible desirability of reorganizing the curriculum around the leading entry-level job titles, conceivably as a series of modules.

> Recommendation 4. Consider for early instruction a series of modules built around the common job titles: e.g., accounts receivable clerk, accounts payable clerk, receipts and disbursements clerk, (special or general) journal clerk, (subsidiary or general) ledger clerk.

The foregoing job titles are merely illustrative; more detailed bases for identifying appropriate job titles are given in Table 20 (pp. 42-43), and the particular job duties that go with each of the titles are easily

identifiable from the job-duty distribution of Table 82 (pp. 202-206) for job levels 1 and 2. It is also the task of specialists in bookkeeping instruction to select an optimum sequence for the modules, probably one that begins with the simplest concepts and builds progressively thereon. It may be, for example, that journalizing is an appropriate first step. In any case, the findings of this investigation on the typical job duties of beginners suggest that the special journals and subsidiary ledgers should precede the General Journal and General Ledger. At least, assignment to one or another of the subordinate books prevails among beginners; the General Journal and General Ledger are rarely entrusted to inexperienced persons.

Two qualifying considerations apply. First, the General Journal and General Ledger are more common in the small-firm than in the large-firm work of employees--so that instruction for small-firm employment should deal more thoroughly with the General books of entry. Second, the distinction between manual and computerized records should be observed in small-city vs. big-city bookkeeping instruction. In the latter instruction, Recommendation No. 2 and the paragraph that follows it (p. 195) apply.

Manual Bookkeeping in Big-City Instruction

Manual bookkeeping dominates small-firm employment and, in New York City, it is the impression of the consultants to this investigation that it prevails in the garment industry, in establishments of whatever size. The proportion of total bookkeeping employment in New York's garment industry is not determinable from the data of this investigation. However, across all our NYC respondents in establishments of all kinds and sizes, five-eighths of their employers maintained computerized accounting systems (to greater or lesser extent). Thus, to confine large-city instruction to computerized bookkeeping would be a mistake (although it must be supposed that computerization will increase). One could not defend putting all students through some one type of curriculum; and the findings of this investigation show that conventional manual instruction (1) goes greatly beyond what is required for computerized entry-level positions and (2) has little transfer value for actual entry-level job duties.

The findings of this investigation make the problem clear enough, but provide no solutions to it. Whether separate (manual and computerized) curricula should be developed or, instead, whether computerized instruction might precede manual bookkeeping instruction (the former requiring little by way

of conceptual understandings and thereby providing a low-difficulty foundation for later attention to applicable concepts)--is hard to say. ["Computerized" bookkeeping instruction, it should be understood, does not mean dealing with computer printouts or punchcard decks, but with the extremely piecemeal manual forms representing portions of journals and ledgers that are turned over to keypunch and bookkeeping machine operators for subsequent processing.] In any event, solutions to the problem are tasks for specialists in bookkeeping instruction. Perhaps the issue considered next is suggestive.

Recordkeeping and Data Processing Instruction

If the data processing supplement to bookkeeping instruction used in New York City has any useful applicability to the work of entry-level bookkeepers, it was not discernible in the findings of this investigation. More or less the same may be said of the formal Recordkeeping curriculum for the kinds of students assigned to it in New York City. The very term has perhaps come to connote instruction of little substance and has become an invidious one. Consider a possibly viable substitute in terminology and in instructional content. Consider that "computerized" bookkeeping, as described above, makes only nominal demands on conceptual understandings, yet can--indeed, must--be tied to real-job activities: via the piecemeal manual records that provide the first-stage documents for later computer processing. Is there not here the possibility of viable, job-oriented instruction for students formerly in Recordkeeping curricula? More able students could continue thereafter with the higher-order concepts and records of manual bookkeeping/accounting systems. In short--

> Recommendation 5. Distinguish in instruction between computerized and manual systems--the former providing the basis for the latter and perhaps providing a viable alternative to the nonfunctional conventional Recordkeeping curriculum.

In view of the majority involvement of all big-city establishments in computerized bookkeeping/accounting systems, Recommendation No. 5 does not mean "computerized" bookkeeping reserved only for students of lesser ability. All students need it. Instead, there is the possibility of homogeneous grouping, different rates of progress through that curriculum, and an earlier stopping point for students of lesser ability. One can conceive of fast and slow groups for "computerized" bookkeeping, with the fast group following there-

after into higher-order concepts and full double-entry records. [Computerized" is an off-the-cuff, invented term for present purposes; specialists may wish to consider some alternative label.]

Finally, the findings of this investigation are so consistent with those of earlier studies as to make pointless further inquiry into what entry-level bookkeepers do--at least, until such time as new technological developments in processing financial information may suggest possible change in job duties and in the prerequisites for performing those duties. It is now time for those responsible for high school instruction to concern themselves with curriculum revision and reform--with painstaking development of instructional materials (and attendant modifications in methodology) in better agreement with the actual duties of beginning employees, especially under computerization.

In that connection, it is pertinent to point to the strikingly different meanings attached by educators and by accounting supervisors in industry to some of the technical terms of bookkeeping/accounting--differences that suggest something of an iron curtain between educators and the world of work. Those that know the world of work should assist educators in the task of curriculum reconstruction. The reference here is not to the C.P.A. in an accounting firm; and the need is not for tiresome platitudes about general traits of the boy-scout-oath or good-at-figures kind. Instead--

> Recommendation 6. For curriculum revision, educators should enlist the services of accounting supervisors in industry, persons who are on the firing line of the design and supervision of bookkeeping/accounting operations in the world of work, and engage their attention to the small details of curriculum reconstruction and to the questions of instructional materials and record forms attendant on that reconstruction.

Some of the earlier, more detailed recommendations for curriculum design are intended merely as suggestions for consideration. They are all aimed at the fundamental requirement--

> Provide a high school bookkeeping curriculum more closely attuned to entry-level job duties. Leave to job experience and later schooling the functions they are better able to serve.

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Table 82

Number and Percentage of Low Level (1-2) and Higher Level (3-6) NYC Respondents Who Perform Each of 131 Job Activities

(Ns = 224 for Levels 1-2, 340 for Levels 3-6)

Job Activity	Number by Level				Percent by Level		
	1	2	1-2	3-6	1-2	3-6	Diff.
(A) Sales or Services Rendered							
1. Do you decide or help to decide to whom credit should be extended?	10	12	22	87	9.8	25.6	15.8
2. Do you keep records of merchandise stock numbers sold or types of services rendered?	16	11	27	73	12.1	21.5	9.4
3. Do you list - by salesman, week, territory, or type of service - customers, subscribers, clients or patients?	21	14	35	76	15.6	22.4	6.8
4. Do you prepare sales invoices or bills for services?	33	19	52	129	23.2	37.9	14.7
5. Do you prepare credit memos?	22	30	52	139	23.2	40.9	17.7
6. Do you keep records of sales taxes charged?	8	8	16	100	7.1	29.4	22.3
7. Do you calculate for recording on sales invoices or bills, extensions, discounts, allowances, deductibles, taxes or freight charges?	41	37	78	147	34.8	43.2	8.4
8. Do you list or total sales invoices, bills or credit memos?	35	37	72	176	32.1	51.8	19.7
9. Do you make entries in a sales journal or a journal for services rendered?	5	11	16	124	7.1	36.5	29.4
10. Do you make entries in a sales returns and allowances journal?	4	3	7	83	3.1	24.4	21.3
11. Do you record C.O.D. sales in a journal?	1	5	6	43	2.7	12.6	9.9
12. Do you calculate salesmen's commissions or expenses?	11	6	17	92	7.6	27.1	19.5
(B) Cash Receipts							
13. Do you calculate discounts, allowances or partial payments before incoming checks are recorded?	15	20	35	140	15.6	41.2	25.6
14. Do you calculate payments or partial payments received as grants or budgetary allocations?	5	6	11	77	4.9	22.7	17.8
15. Do you enter incoming checks in a cash receipts journal?	4	23	27	218	12.1	64.1	52.0
16. Do you record bank deposits in a cash receipts journal?	4	23	27	223	12.1	65.6	53.5
17. Do you start each month's cash receipts journal with a cash balance from the previous month?	3	14	17	129	7.6	37.9	30.3
18. Do you total cash receipts records, registers or journals?	7	27	34	238	15.2	70.0	54.8
19. Do you make journal entries for cash received on installment sales?	0	2	2	61	.9	17.9	17.0
20. Do you use a cash register?	1	4	5	35	2.2	10.3	8.1
21. Do you count cash received or prove correctness of cash on hand with totals in a cash register?	5	10	15	62	6.7	18.2	11.5
22. Do you keep records of sales taxes collected?	2	6	8	82	3.6	24.1	20.5
23. Do you collect cash from two or more registers and record the totals?	0	1	1	23	.4	6.8	6.4
24. Do you keep records of expenses, purchases or drawing paid for by coins and bills taken from daily receipts?	3	8	11	64	4.9	18.8	13.9
25. Do you make entries for discounting notes payable?	1	4	5	61	2.2	17.9	15.7
(C) Accounts Receivable							
26. Do you record or post invoices, bills, or credit memos to accounts of customers, subscribers, patients, clients or grantors?	23	29	52	183	23.2	53.8	30.6
27. Do you post to accounts, checks or cash received?	18	26	44	218	19.6	64.1	44.5
28. Do you key off or letter off entries in accounts?	12	20	32	187	14.3	55.0	40.7
29. Do you find balances in accounts?	33	41	74	243	33.0	71.5	38.5

Table 82 (Continued)

Job Activity	Number by Level				Percent by Level		
	1	2	1-2	3-6	1-2	3-6	Diff.
30. Do you prepare statements of accounts?	23	31	54	189	24.1	55.6	31.5
31. Do you list or prepare schedules of end of month balances of accounts?	22	23	45	212	20.1	62.3	42.2
32. Do you age accounts receivable to identify how long they are past due?	13	24	37	140	16.5	41.2	24.7
33. Do you keep records of accounts written off as bad debts?	13	19	32	140	14.3	41.2	26.9
(D) Purchases of Services Received							
34. Do you prepare purchase orders or requisitions?	12	12	24	56	10.7	16.5	5.8
35. Do you compare merchandise or services received with purchase invoices or bills received?	14	17	31	119	13.8	35.0	21.2
36. Do you code purchase invoices or bills received to indicate the nature of the purchase or service?	14	23	37	91	16.5	26.8	20.3
37. Do you record purchase quantities on inventory, stock, or open to buy records?	10	5	15	35	6.7	10.3	3.6
38. Do you compare the total of purchase invoices or expense vouchers with amounts budgeted for them?	6	6	12	49	5.4	14.4	9.0
39. Do you prepare credit slips for returned purchases or for errors on purchase invoices?	5	15	20	70	8.9	20.6	11.7
40. Do you calculate due date on purchase invoices, vouchers or bills received?	8	15	23	88	10.3	25.9	15.6
41. Do you prepare vouchers for purchases or contracted services?	5	8	13	56	5.8	16.5	10.7
42. Do you enter purchases or bills for services in a purchases journal or journal for services received?	2	8	10	121	4.5	35.6	31.1
43. Do you make entries in a journal that has departmental column headings?	3	7	10	106	4.5	31.2	26.7
44. Do you enter vouchers in a voucher register?	2	6	8	52	3.6	14.7	11.1
45. Do you make entries in a purchase returns journal?	3	1	4	46	1.8	13.5	11.7
(E) Cash Disbursements							
46. Do you prepare stubs and checks for cash disbursements?	11	26	37	217	16.5	63.8	47.3
47. Do you code checks or stubs by function?	6	17	23	126	10.3	37.1	26.8
48. Do you enter issued checks in a cash payments journal?	2	13	15	191	6.7	56.2	49.5
49. Do you make entries in a check register that is part of a voucher system?	2	8	10	78	4.5	22.9	18.4
50. Do you verify correctness of cash journals by comparing balances in journals with balances in checkbook?	1	8	9	177	4.0	52.1	48.1
51. Do you make entries relating to operating expenses such as rent, telephone, electricity, etc?	2	11	13	190	5.8	55.9	50.1
52. Do you make entries for proprietor's personal drawings?	0	7	7	91	3.1	26.8	23.7
53. Do you reconcile the bank statement balance with the checkbook or cash journal balance?	1	19	20	192	8.9	56.5	47.6
54. Do you make entries for bank charges and collection charges?	3	11	14	182	6.2	53.5	47.3
55. Do you use a pegboard or other "one write" system for cash receipts or cash payments?	1	2	3	34	1.3	10.0	8.7
56. Do you record entries in journals for collection or payment of notes receivable or payable?	1	8	9	112	4.0	32.9	28.9
(F) Accounts Payable							
57. Do you post purchase or return amounts in creditors' or vendors' accounts?	3	11	14	136	6.2	40.0	33.8
58. Do you post to creditors' accounts the amounts of cash paid to them?	2	10	12	151	5.4	44.4	39.0
59. Do you compare statements received from creditors with balances in their accounts?	4	17	21	170	9.4	50.0	40.6
60. Do you list or prepare schedules for end of month balances in creditors' accounts?	2	6	8	140	3.6	41.2	37.6

Table 82 (Continued)

Job Activity	Number by Level				Percent by Level		
	1	2	1-2	3-6	1-2	3-6	Diff.
(G) Merchandise Records							
61. Do you keep cost records for manufacturing departments?	5	7	12	30	5.4	8.8	3.4
62. Do you prepare charge slips to subcontractors for merchandise sent to them?	0	3	3	10	1.3	2.9	1.6
63. Do you keep records of merchandise and money received from or due to subcontractors?	2	4	6	28	2.7	8.2	5.5
64. Do you prepare charge slips or credit slips for merchandise shipped to or from branches or subsidiaries?	2	6	8	19	3.6	5.6	2.0
65. Do you make journal entries for merchandise shipped or received on consignment?	1	4	5	27	2.2	7.9	5.7
66. Do you price or total merchandise for physical inventory?	5	7	12	48	5.4	14.1	8.7
67. Do you compare physical inventory count with inventory or stock records?	5	6	11	39	4.9	11.5	6.6
(H) Petty Cash							
68. Do you prepare petty cash slips or vouchers?	11	19	30	143	13.4	42.1	28.7
69. Do you enter petty cash slips or vouchers in a petty cash book or journal?	1	18	19	120	8.5	35.3	26.8
70. Do you post directly from the petty cash journal to the general ledger?	1	5	6	80	2.7	23.5	20.8
71. Are you responsible for maintaining the petty cash box or drawer?	2	12	14	95	6.2	27.9	21.7
(I) Payroll							
72. Do you prepare time cards for employees?	10	15	25	98	11.2	28.8	17.6
73. Do you calculate time worked by employees?	15	21	36	135	16.1	39.7	23.6
74. Do you calculate gross earnings of employees?	6	20	26	138	11.6	40.6	29.0
75. Do you calculate piecework earnings by employees?	5	9	14	43	6.2	12.6	6.4
76. Do you calculate payroll deductions for taxes, etc?	6	17	23	133	10.3	39.1	28.8
77. Do you enter payroll information in a payroll book or register?	7	22	29	144	12.9	42.4	29.5
78. Do you record payroll entries in a cash payments journal?	2	7	9	134	4.0	39.4	35.4
79. Do you post directly from the payroll journal to the general ledger?	0	4	4	89	1.8	26.2	24.4
80. Do you enter payroll information on individual employees' earnings records?	6	18	24	132	10.7	38.8	28.1
81. Do you prepare forms for depositing at the bank of employees' and employer's payroll taxes?	3	10	13	126	5.8	37.1	31.3
82. Do you make journal entries for depositing employer's and employees' payroll taxes?	1	5	6	111	2.7	32.6	29.9
83. Do you total individual employees' earnings records at the end of each quarter?	2	16	18	131	8.0	38.5	30.5
84. Do you prepare quarterly payroll tax reports for federal, state or city governments?	3	12	15	117	6.7	34.4	27.7
85. Do you total employees' earnings records for the year?	4	14	18	136	8.0	40.0	32.0
86. Do you prepare information for employees' W-2 forms?	5	17	22	129	9.8	37.9	28.1
(J) Financial Statements							
87. Do you prepare sales or commercial rent tax returns?	1	1	2	56	.9	16.5	15.6
88. Do you prepare trial balances?	3	4	7	134	3.1	39.4	36.3
89. Do you prepare work sheets for balance sheets or income statements?	3	2	5	96	2.2	28.2	26.0

Table 82 (Continued)

Job Activity	Number by Level				Percent by Level		
	1	2	1-2	3-6	1-2	3-6	Diff.
90. Do you prepare balance sheets or income statements?	2	1	3	82	1.3	24.1	22.8
91. Do you prepare comparative balance sheets or comparative income statements?	1	1	2	61	.9	17.9	17.0
92. Do you prepare income tax or franchise tax returns for your employer?	2	1	3	34	1.3	10.0	8.7
93. Do you use financial statements as a basis for preparing current ratios, working capital or merchandising turnover?	1	0	1	33	.4	9.7	9.3
95. Do you calculate the distribution of net profits for a partnership?	1	0	1	10	.4	2.9	2.5
(K) General Ledger and General Journal							
96. Do you keep records or accounts for mortgage interest and principal?	3	4	7	41	3.1	12.1	9.0
97. Do you record entries in the general journal?	6	11	17	139	7.6	40.9	33.3
98. Do you record entries in the general journal for appropriations granted to your department or fund?	1	3	4	41	1.8	12.1	10.3
99. Do you make entries in the general journal for anticipated revenues for your department or fund?	2	1	3	29	1.3	8.5	7.2
100. Do you post from the general journal to the general ledger?	3	2	5	114	2.2	33.5	31.3
101. Do you record notes receivable or notes payable in the general journal or other journals?	2	4	6	86	2.7	25.2	22.5
102. Do you record entries relating to interest income or interest expense?	4	9	13	116	5.8	34.1	28.3
103. Do you reconcile accounts receivable or accounts payable with general ledger accounts?	4	23	27	180	12.1	52.9	40.8
104. Do you record payroll entries in the general journal?	0	6	6	94	2.7	27.6	24.9
105. Do you reconcile payroll records with general ledger accounts?	1	9	10	114	4.5	33.5	29.0
106. Do you prepare adjusting entries for bad debts or depreciation?	1	6	7	80	3.1	23.5	20.4
107. Do you make adjusting entries for accrued expenses (unpaid salaries, etc.)?	3	7	10	80	4.5	23.5	19.0
108. Do you prepare adjusting entries for deferred expenses (unexpired insurance, supplies on hand, etc.)?	0	6	6	64	2.7	18.8	16.1
109. Do you make adjusting entries for accrued or deferred income?	2	3	5	65	2.2	19.1	16.9
110. Do you make correction entries in journals and ledgers when mistakes are found?	9	32	41	216	18.3	63.5	45.2
111. Do you make entries for recovery of bad debts previously written off?	1	5	6	103	2.7	30.3	27.6
112. Do you keep drawing and capital accounts for an individual proprietorship or partnership?	0	1	1	29	.4	8.5	8.1
113. Do you make entries for earnings and dividends in capital stock, retained earnings, and other capital accounts?	3	1	4	42	1.8	12.3	10.5
114. Do you make entries to close income and expense accounts at the end of the fiscal year?	2	5	7	83	3.1	24.4	21.3
115. Do you make, if necessary, reversal entries in the general journal?	6	7	13	137	5.8	40.3	34.6
(L) Data Processing							
116. Do you make calculations in connection with entering financial data on coding or input sheets for data processing?	24	28	52	84	23.2	24.7	1.5
117. Do you enter financial data on coding/input forms for data processing?	24	24	48	71	21.4	20.9	.5
118. Do you compare data processing coding/input forms with original bookkeeping and business papers?	26	27	53	77	23.7	22.6	1.1

Table 82 (Continued)

Job Activity	Number by Level				Percent by Level		
	1	2	1-2	3-6	1-2	3-6	Diff.
119. Do you enter coding information on business papers in preparation for data processing?	25	37	62	71	27.7	20.9	6.8
120. Do you compare or balance data processing print outs with original business papers?	22	34	56	77	25.0	22.6	1.6
121. Do you enter corrections on coding input forms for data processing?	30	37	67	85	29.9	25.0	4.9
122. Do you enter inventory information on coding forms?	16	8	24	26	10.7	7.6	3.1
123. Do you examine data processing records to verify accounts?	28	30	58	66	25.9	19.4	6.5
124. Do you examine data processing records to find recorded information?	31	40	71	103	31.7	30.3	1.4
125. Do you prepare flow charts for data processing systems?	6	2	8	12	3.6	3.5	.1
(vii) Miscellaneous							
126. Do you keep a register of your organization's insurance policies?	3	7	10	73	4.5	21.5	17.0
127. Do you file claims for losses covered by insurance?	3	7	10	81	4.5	23.8	19.3
128. Do you calculate amounts of interest income or interest expense?	5	8	13	83	5.8	24.4	18.6
129. Do you record entries in notes receivable or notes payable registers?	2	6	8	75	3.6	22.1	18.5
130. Do you keep a subsidiary ledger or other record for plant, equipment or other fixed assets?	2	10	12	46	5.4	13.5	8.1
131. Do you keep subsidiary ledgers for individual grants or appropriations?	0	4	4	21	1.8	6.2	4.4
132. Do you make entries in journals that differ from their column headings (double posting, negative entries, etc.)?	2	10	12	57	5.4	16.8	11.4

Table 83

Questionnaire Activities Included in Various High School Textbooks

[B = Beginning, A = Advanced, U = Unspecified level; the book numbers (1-8) correspond to those similarly numbered in the footnote; x denotes inclusion of the activity in the book.]

Ques. Item No.	Book Number								Ques. Item No.	Book Number							
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
	Record-keeping			Bookkeeping						Record-keeping			Bookkeeping				
	B	A	U	B	B	B	A	A		B	A	U	B	B	B	A	A
1		x			x				7	x	x	x	x	x			
2	x		x		x		x	x	8	x		x	x	x	x		x
3			x				x	x	9	x	x	x	x	x	x		x
4	x	x	x	x	x		x	x	10	x	x		x				x
5	x	x	x	x	x	x		x	11							x	x
6	x	x	x		x	x	x	x	12			x	x				x

Table 83 (Continued)

Ques. Item No.	Book Number 1	2	3	4	5	6	7	8	Ques. Item No.	Book Number 1	2	3	4	5	6	7	8
	Record-keeping			Bookkeeping						Record-keeping			Bookkeeping				
	B	A	U	B	B	B	A	A		B	A	U	B	B	B	A	A
13		x	x	x	x		x	x	56				x	x	x	x	x
14							x		57		x	x	x	x	x	x	x
15	x	x	x	x	x	x		x	58		x	x	x	x	x	x	x
16	x	x		x					59				x				
17			x	x		x		x	60		x	x	x	x	x	x	
18	x	x	x	x	x	x		x	61							x	x
19							x	x	62								
20	x	x	x		x	x		x	63								
21	x		x		x	x			64								
22	x	x			x	x	x	x	65							x	x
23	x					x			66			x		x	x	x	x
24	x				x	x		x	67			x		x		x	x
25				x	x	x	x	x	68	x		x	x	x	x	x	x
26	x	x	x	x	x	x	x	x	69	x		x	x	x			x
27	x	x	x	x	x	x	x	x	70				x		x		x
28									71	x		x	x	x	x		x
29	x	x	x	x	x	x		x	72	x	x	x	x	x	x	x	x
30	x	x	x	x	x	x	x		73	x	x	x	x	x	x	x	x
31	x	x	x	x	x	x	x	x	74	x	x	x	x	x	x	x	x
32					x	x	x	x	75			x	x	x			x
33								x	76	x	x	x	x	x	x	x	x
34	x	x	x	x	x			x	77	x	x	x	x	x	x	x	x
35	x	x	x	x	x				78		x		x		x	x	x
36									79				x	x			
37	x		x		x		x	x	80	x	x	x	x	x	x	x	x
38			x				x		81		x	x	x	x	x		x
39		x	x	x	x	x	x	x	82				x	x	x		x
40	x	x	x	x	x	x		x	83	x	x	x	x	x	x		x
41							x	x	84		x	x	x	x	x		x
42	x	x	x	x	x	x	x	x	85	x	x		x	x	x		x
43					x		x	x	86	x	x	x	x	x	x		x
44							x	x	87					x	x		x
45		x		x			x	x	88		x	x	x	x	x	x	x
46	x	x	x	x	x	x			89				x	x	x	x	x
47									90		x	x	x	x	x	x	x
48	x	x	x	x	x	x	x	x	91							x	x
49							x	x	92			x		x	x	x	
50	x			x					93					x		x	x
51	x	x	x	x	x	x	x	x	95						x	x	x
52	x	x		x	x	x	x	x	96								
53	x		x	x	x	x	x	x	97			x	x	x	x	x	x
54	x			x	x	x	x	x	98								
55		x			x	x		x	99								

Table 83 (Continued)

Ques. Item No.	Book Number 1	2	3	4	5	6	7	8	Ques. Item No.	Book Number 1	2	3	4	5	6	7	8
	Record-keeping			Bookkeeping						Record-keeping			Bookkeeping				
	B	A	U	B	B	B	A	A		B	A	U	B	B	B	A	A
100			x	x	x	x		x	117		x	x	x	x		x	x
101				x	x	x	x	x	118					x			
102				x	x	x	x	x	119							x	
103		x	x	x	x	x	x	x	120								
104					x	x	x	x	121								
105				x	x	x		x	122					x		x	x
106				x	x	x	x	x	123								
107				x	x	x	x	x	124								
108				x	x		x	x	125			x		x	x	x	x
109					x	x	x	x	126								
110				x		x			127								
111					x		x	x	128				x	x	x		x
112		x	x	x	x	x	x	x	129					x		x	x
113						x	x	x	130							x	x
114				x	x	x	x	x	131								
115						x	x	x	132				x	x	x		
116		x			x	x	x	x									

Note. The books are:

1. Baron, H. and Steinfeld, S.C. Clerical Record Keeping, Course I (2d ed.). Cincinnati: South-Western, 1965.

2. Baron, H. and Steinfeld, S.C. Clerical Record Keeping, Course II Cincinnati: South-Western, 1970.

3. Huffman, H., Stewart, J.R. and Schneider, E. General Recordkeeping (6th ed.). New York: McGraw-Hill, 1971.

4. Janis, A. and Miller M. Fundamentals of Modern Bookkeeping (First Course). New York: Pitman, 1965.

5. Freeman, M.H., Hanna, J.M. and Kahn, G. Accounting 10/12. New York: McGraw-Hill, 1968).

6. Boynton, L.D., Carlson, P.A., Forkner, H.L., and Swanson, R.M. 20th Century Bookkeeping and Accounting, First-Year Course (23d ed.). Cincinnati: South-Western, 1967.

7. Boynton, L.D., Carlson, P.A., Forkner, H.L., and Swanson, R.M. 20th Century Bookkeeping and Accounting, Advanced Course (23d ed.). Cincinnati: South-Western, 1968.

8. Clow, C.A., MacDonald, R.D., Blanford, J.T., Freeman, M.H., Hanna, J.M. and Kahn, G. Gregg Accounting, Advanced Course (2d ed.). New York: McGraw-Hill, 1969.

TECHNICAL APPENDIX

This technical appendix describes the details of sampling of New York City and upstate private employers and their employees associated with the questionnaire data of this investigation. Governmental employees are not represented here but, instead, are included among the Labor Department interviews.

Sampling of New York City Employers and Employees

The first level of sampling was of private (nongovernmental) employers. Then, within cooperating employers, employees were sampled. The two successive sampling stages and methods are described in turn.

Sampling of Employers. Economy in the conduct of this investigation could have been effected by access to a sample of employers known to employ bookkeepers. However, data of that kind are collected by the Bureau of Labor Statistics on the understanding that individual employers will not be identified to any outside agency. Accordingly, there was no recourse but to sample from a population file not subject to that constraint--the computer file of all New York City private employers maintained by the New York State Department of Commerce--in the foreknowledge that numbers of employers drawn from that file would be inapplicable to the present study because they employ no bookkeepers.

The Commerce Department supplied (in the form of a duplicate set of computer-printed, gummed mailing labels) a probability sample[39] of New York City private employers stratified by type and size. "Type" is represented by ten different SICs (Standard Industrial Classifications) and "size" by six ranges of number of employees. Sampling rates from the Commerce Department population file were set so as to supply, with a modification, a probability-in-proportion-to-size sample. Strict sampling on that basis was modified to provide a somewhat larger number of large firms: first, because the large firm employs more potential respondents to our questionnaire than the small firm does; second, to insure at least some responses from large firms in view of the small number of such firms relative to the number of small firms. That is, an overage of large firms could be held in reserve. The sampling rates for size of firm are shown in Table 84 on the next page.

The sample of employers thus drawn, because of the adjustments, approxi-

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[39] See Footnote 15, p. 14.

mates one whose probabilities are in proportion to size, and its size was originally predicated on an estimate of the number of questionnaire returns that might be secured within the budget for this investigation. From it, a sample strictly proportional to size was drawn and a mailing was sent to the selected firms. Returns failed to match the parent distribution for type and size and seemed unlikely to do so after reasonable (follow-up) effort and time. Therefore, the remaining sample firms were contacted--foregoing strict proportionality and accepting approximate proportionality. However, tallying of questionnaire returns received in response to a spring 1972 mailing to an original sample of more than 700 employers revealed very small frequencies in some cells (sizes within types of firm). Therefore, in the fall of 1972 a second probability sample of more than 1,200 employers was drawn on the same basis as the first one, but with sampling rates doubled. Different entry points (random starts) were made in the population file of the Commerce Department to minimize duplication of firms in the two samples.[40]

Table 84

Sampling Rates for Size of Firm

No. of Employees	Sampling Percentage	Sampling Rate
0-3, 4-9	.2	1 in 500
10-99	.5	1 in 200
100-499	4.0	1 in 25
500-999	10.0	1 in 10
1000+	20.0	1 in 5

Note. To illustrate strict proportionality, with 55 as the midpoint of the 10-99 interval and 300 the midpoint of the 100-499 interval, the sampling rate from the latter interval would be about 5½ times (300/55) the rate from the former interval; in fact, it was 8 times the rate (4.0/.5). Similar upward adjustments were made in the still larger firms.

[40]Some duplication is inevitable. For example, if there is only one New York City employer of a certain type and size, that employer will necessarily turn up in all samples that specify a selection from that cell (type and size).

Application of the sampling rates of Table 84 to the spring sample of employers is illustrated next for firms of Size D (100-499 employees), calling for a 4.0 percent sampling rate. For each SIC group, the upper figure is the number of sample firms and the lower one the number in the population of all 197,565 New York City private employers as of April 1971.[41]

SIC	01-17	19-39	40-47	48-49	50-59	60-62	63-67	70-79+ 80-89	80	Total
Sample	7	40	10	1	23	9	8	28	5	131
Pop.	163	998	226	16	569	204	176	678	115	3,145

Entries in the population file were as of early 1971, whereas our samples were drawn in the spring and fall of 1972. In the interim some of our sample employers had gone out of business or had moved out of the geographical limits of New York City (as inferred from return of our mail as undeliverable and from no listing in the phone books of New York City). Of the total of 2,010 different employers in the Commerce Department sample (739 in the spring and 1,271 in the fall), 197 were identified as inapplicable or ineligible (out of business, not in New York City, duplicates), leaving a remainder of 1,813 potentially pertinent New York City private employers (727 in the spring sample and 1,086 in the fall sample). The distribution of that sample, by type and size of firm, is displayed in Table 85 (next page).

Eligible Employers. Table 85 displays the numbers of sample employers of various types and sizes who are presumed to have received our mailing. Among them, large numbers of ineligibles were anticipated (mainly small firms that employ no bookkeepers). To identify ineligibles, the tactic described in Footnote 3 was employed, with outcomes as given on page 6 of this report.[42]

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[41] For many of the cells and for "total" the sample is more than 4 percent because of the random entry point for each cell in the population file. For example, if a selection of every fifth name (20 percent) in a file of 102 names starts with the second of the 102, 21, not 20, names will be selected (20.8 percent selection rate).

[42] The assumption was that the small firm employs at most one bookkeeper, whose duties are probably more extensive in scope than those found under the greater specialization in large firms. It was also anticipated that bookkeeping might often be only a portion of the duties of a small-firm employee. Accordingly, inquiry of small firms (0-9 employees) was about employment of any person whose duties include bookkeeping. In the larger firms (10-1,000+ employees), on the other hand, information was requested only from entry-

Table 85

Distribution of Potentially Eligible New York City Employers, by Type and Size

Standard Industrial Classification	Number of Employees						
	A 0-3	B 4-9	C 10-99	D 100-499	E 500-999	F 1000+	Total
Agriculture, Mining, Contract Construction (SIC 01-17)	31	13	27	11	3	0	85
Manufacturing (SIC 19-39)	41	34	171	67	19	13	345
Transportation (SIC 40-47)	15	10	20	17	5	7	74
Communication and electric, gas, and sanitary services (SIC 48-49)	2	1	2	2	1	4	12
Wholesale and retail trade (SIC 50-59)	189	105	170	39	12	10	525
Banking, other credit agencies, security and commodity brokers, dealers, exchanges, and services (SIC 60-62)	8	5	10	13	10	15	61
Insurance and real estate (SIC 63-67)	111	24	26	15	6	5	187
Services (nonprofessional) (SIC 70-79)	95	40	65	23	10	8	241
Services (medical and other health) (SIC 80)	48	7	6	8	8	10	87
Services (other: legal, educational, etc.) (SIC 81-89)	115	19	38	16	6	2	196
Total	655	258	535	211	80	74	1813

Since the spring and fall samples were drawn from the same population file, it was judged statistically sound (in order to save the personnel and other costs of phoning 691 small firms in the fall sample of 1,086 firms) to apply the spring percentages of ineligibility to the fall sample of small firms (Sizes A and B, 0-3 and 4-9 employees). The larger firms in both samples were also phoned (for the reasons given on page 16), and a number were

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level persons. It may be mentioned in passing that very large proportions of ineligibility were found among realtors (SIC 65), very often consisting of a landlord of one or more buildings conducting his business singlehandedly out of his own home or apartment.

identified who either employed no entry-level bookkeeping personnel or whose accounting operations were conducted outside New York City.

In sum, an original sample of 2,010 employers was reduced to 1,813 distributed as shown in Table 85, and they, in turn, to 731 "eligible" employers, defined as: (a) conducting their accounting operations in New York City and as (b) in small firms, employing any person whose duties include bookkeeping and, in larger firms, employing at least one full-time, entry-level bookkeeper. The distribution of these 731 eligible firms by type and size is shown in Table 86.

Table 86

Distribution of Eligible Employer Units by Type and Size

SIC*	Number of Employees						Total
	A 0-3	B 4-9	C 10-99	D 100-499	E 500-999	F 1000+	
01-17	5	2	12	5	3	0	27
19-39	5	8	95	48	13	9	178
40-47	0	1	12	14	3	5	35
48-49	0	0	0	2	1	4	7
50-59	23	37	83	26	9	9	187
60-62	3	0	7	11	8	15	44
63-67	20	8	8	10	5	4	55
70-79	17	14	34	18	10	6	99
80	15	2	3	8	8	10	46
81-89	18	3	13	12	5	2	53
Total	106	75	267	154	65	64	731

*See Table 85, p. 212, for SIC descriptions.

Sampling of Employees. It was anticipated that small employers (up to 9 employees) would be unlikely to employ more than one bookkeeper. The cover letter to firms of Sizes A and B (see p. 228) was therefore accompanied by a copy of the questionnaire and associated materials and included the request that the enclosures be given to the bookkeeper employed. The larger firms (C-F, 10-1,000+ employees) were sent only a cover letter, plus a list

of illustrative entry-level job titles (see pp. 227, 229)--without accompanying questionnaire. On the heels of delivery of that letter, each employer was phoned and, upon his agreement to cooperate, an appropriate sample of his entry-level bookkeepers was selected. In short, just as employers were selected at random from Commerce Department files, so were employees within firms sampled at random, according to the sampling plan shown in Table 87.[43]

Table 87

Sampling of Employees Within Employer Units

No. of Ent. Lev. Bkkprs.	Size			
	C	D	E	F
1	1	1	1	1
2	2	2	2	2
3	2(1)	2(1)	2(1)	2(1)
4	4	2(1)	2(1)	2(1)
5-6	4(1)	2(1)	2(1)	2(1)
7-10	5(2)	3(2)	2(1)	2(1)
11-15	7(4)	4(2)	2(1)	2(1)
16-19	9(5)	5(3)	3(2)	2(1)
20-29	13(7)	8(4)	4(2)	2(1)
30-49	20(10)	13(7)	5(3)	3(2)
50-75	32(16)	18(9)	6(3)	4(2)
76-99		25(13)	9(5)	5(3)
100-149		25(13)	13(7)	6(3)
150-249			20(10)	10(5)
250-499			38(19)	19(10)
500-999				38(19)

[43]Upon telephone contact with an employer and his expression of willingness to cooperate, the number of entry-level bookkeepers and their names or initials were solicited. Then, persons were selected from that list (using a table of random numbers), according to the sampling plan displayed in Table 87. If, for example, a firm of Size C employed 13 entry-level bookkeepers, 7 of those 13 were selected, plus 4 (half as many) alternates as potential replacements for any of the original 7 who might not wish to complete our questionnaire. The appropriate materials were then mailed to the employer for distribution to the selected employees. As returns were received, the sender's names were checked off against our file records of their names or initials.

Employee sampling (Table 87) was with probabilities approximately inversely proportional to employer-selection rates, so as to yield approximately equal probability of selection for all entry-level bookkeepers within each of the six size classes--with one mandatory modification: in firms with more than one entry-level bookkeeper, minimum sample size was two.

Summarizing on New York City sampling procedures, within the six size classes all employers had an approximately equal probability of selection and, within employers, all entry-level bookkeepers had an approximately equal probability of selection.

Upstate Sampling

Employer sampling in each of the three small upstate cities (Auburn, Batavia, Elmira--designated to the investigator by the New York State Department of Education) was in proportion to the 1970 census data on population in these cities, distributed as follows: Auburn 70, Batavia 40, Elmira 80--for a total of 190 employers. Sampling was done from the yellow pages of the phone books for these cities. Every n^{th} yellow page was selected (n varying with the number of employers to be selected in relation to the total number of yellow pages in that phonebook: e.g., every page in phonebook X, every fourth page in phonebook Y, etc.). Within yellow pages, a random selection of a particular listing was made, using a table of random numbers and counting duplicate listings of the same employer as a single listing. The foregoing procedures would yield a probability sample under the condition of a nearly equal number of discrete listings on each page. Varying amounts of display advertising on certain pages violate that condition. However, the effort of counting discrete listings throughout each book, rather than working on a page-by-page basis, was not felt worthwhile--not judged likely to generate a sample materially different from that resulting from selection on every n^{th} page.

Predicated on the assumption that small city equals small firm equals one bookkeeping employee, a questionnaire and associated materials were mailed to each of the 190 employers, who were then followed up by telephone by the staff of our sister Institute at Cornell University. As anticipated, numbers of the employers contacted by phone reported that they employed no bookkeepers, thereby reducing the original sample of 190 employers to 101 eligible employers. In the absence of official (Department of Commerce)

classification of these employers by type and size, a best estimate of SIC was made by the New York State Department of Labor on the basis of the yellow-page classification and full firm name of each employer, supplied by the principal investigator. Size information (number of employees) could not be secured. The SIC distribution of the 101 eligible upstate employers, by city, is given in Table 88.

Table 88

SIC Distribution of Eligible Upstate Employers

(By city)

SIC[a]	Auburn	Batavia	Elmira	Total
01-17	3	3	2	8
19-39	3	2	1	6
40-47	2	1	1	4
48-49	1	3	1	5
50-59	13	11	19	43
60-62	1	0	1	2
63-67	3	2	2	7
70-79	7	3	8	18
80	1	1	0	2
81-89	2	2	2	6
Total	36	28	37	101

[a]See Table 85, p. 212, for SIC definitions.

Response Rates

Of the 731 eligible New York City employers, 163 flatly refused to cooperate, leaving a potentially cooperative group of 568 employers: ones who supplied a list of entry-level bookkeepers and to whom questionnaires were sent for distribution to designated employees. Among these 568, 231 were not heard from further, despite telephone follow up. Whether the contact person (owner, manager, personnel director, director of accounting, vice-president for finance, office manager, head bookkeeper, et al.) discarded our questionnaire(s) upon receipt or whether the questionnaires were distributed to employees as requested, but not completed by them, is not known. At least one completed questionnaire was received from each of the remaining 337

employers. In New York City the response rate from potentially eligible employers is, then, 46.1 percent (337/731), and from potentially responsive employers, 59.3 percent (337/568). A summary accounting for New York City private employers consists of:

Potentially eligible		1813
Less ineligible		
Unreachable	176	
No entry-level bkkprs.	906	
Total ineligible		1082
Actually eligible		731
Less refused to cooperate		163
Potentially responsive		568
Less not heard from		231
No. of employers heard from		337

To the 568 potentially responsive employers, a total of 1,191 questionnaires was sent. From some of these employers, nothing was returned; from others, all selected persons responded; from still others, some but not all employees responded. Of the total distributed, 597 usable returns were received, for an employee response rate of 50.1 percent (597/1191). It may be mentioned in passing that the spring and fall response rates were virtually identical, both for employers and employees.

The distribution of New York City employer and employee responses, by SIC and size, is shown in Table 90 (next page).

Upstate, 59 responses were received from 56 employers: 1 from each of 53 different employers and 2 from each of 3 other employers. The employer response rate is 55.4 percent (56/101), and the employee response rate is 56.7 percent (59/104). The employers of these 59 respondents are distributed by SIC as displayed in Table 89.

Table 89

SIC Distribution of 59 Upstate Responses

01-17	19-39	40-47	48-49	50-59	60-62	63-67	70-79	80	81-89	Total
4	5	0	3	28	2	6	8	1	2	59

As is evident from the totals of the size columns of Table 90 (next page), in the smaller firms each respondent tended to represent a different employer.

As employer size increases, so do respondents per employer: about 1.5 respondents per firm of Size C, about 1.8 for firms of Size D, about 2.1 for firms of Size E, and about 3.1 for firms of Size F. As is evident from the totals of the SIC rows of Table 90, in SIC 01-17 (mainly Contract Construction), the tendency is toward one beginning bookkeeper employed by each such employer; at the other extreme, employers in SIC 48-49 (Communication and Public Utilities) are substantial users of beginning bookkeepers; to a somewhat lesser extent, so are those in "paperwork" areas (banking and allied areas, insurance, stock brokerage).

Of special note in relation to the coverage of types and sizes found among our returns: with but two exceptions, every nonzero "eligible" cell (Table 86) is paralleled by a nonzero "returns" cell (Table 90).

Table 90

Distribution, by SIC and Size, of New York City Employer/Employee Respondents
(Frequencies shown as: Employer/Employee)[a]

SIC[b]	Size						Total
	A 0-3	B 4-9	C 10-99	D 100-499	E 500-999	F 1000+	
01-17	2/2	1/1	6/7	3/4	1/1	0	13/15
19-39	0	4/5	48/57	16/29	10/21	3/9	81/121
40-47	0	1/1	6/11	8/16	2/3	3/6	20/37
48-49	0	0	0	2/4	1/3	2/22	5/29
50-59	11/11	11/11	41/66	11/21	2/12	6/13	82/134
60-62	0	0	4/7	5/9	6/13	11/28	26/57
63-67	8/11	1/1	5/18	6/8	5/11	2/5	27/54
70-79	3/3	4/4	18/31	7/11	4/10	3/9	39/68
80	2/2	0	2/4	7/13	5/6	8/19	24/44
81-89	3/3	1/1	5/8	5/9	4/7	2/10	20/38
Total	29/32	23/24	135/209	70/124	40/87	40/121	337/597

[a]The table is read as follows: At the intersection of SIC 81-89 with Size F, 2/10 means that questionnaires were received from 10 different bookkeepers employed by 2 different employers.

[b]See Table 85, p. 212, for SIC descriptions.

Generalizability of Findings to All Entry-Level Bookkeepers

As given in the body of this report, respondents consisted of all levels of accounting personnel from the lowliest clerks to company comptrollers; and findings that vary with job-responsibility level are reported as such. The central question is: Do our findings represent the "world" of bookkeeping employment and, within it, the subclass of entry-level employees to which this investigation was primarily addressed?

A first answer to that question is a matter of definition of the population of which our respondents are members; namely, all persons who would have been respondents had a complete census been undertaken. That is, temporarily setting aside the problem of nonresponse (employers and employees in the sample who did not cooperate), the bases for drawing the sample, explained in detail earlier in this technical appendix, necessarily make the respondents representative of those who would have responded had all New York City private employers been approached. On that issue, representativeness is defined by the sampling procedures that were employed.

Consider, next, nonresponse. The fundamental issue of the generalizability of sample findings to the defined population of bookkeeping activities rests on whether the job activities of respondents and nonrespondents differ. One standard test of that issue assumes that the tardy respondent who has to be nagged or otherwise pressed to respond may be taken to stand for unwillingness at the level of nonresponse (for whatever reasons). On that prevailing assumption, comparison of findings from early and late respondents provides the appropriate test. Such a test could not be adopted here because tardiness was not uniform across employers according to size (total number of employees). For the smaller employers, reaching the right company officer and, in turn, one or more of his few bookkeepers was swiftly accomplished; questionnaire returns from such employees tended to arrive early. For the larger employers, on the other hand, endless telephoning over a period of days and even weeks was often required to reach the company officer who could take responsibility for allowing access to bookkeeping personnel; and then it could take days and even weeks for that company officer to have in hand a list of all pertinent employees (from a number of departments or divisions in the firm or at a number of geographic locations), from which a sample could be drawn. Thus, returns from larger employers were late in arriving. As a result, early vs. late is not, in this instance, an index of

unwillingness to cooperate but, instead, a built-in characteristic of size of firm. Accordingly, any comparison of early with late respondents would reveal not the job activities of hypothesized nonrespondents, but rather the job-activity differences associated with size of firm.

As an alternative test, consider the reasons for nonresponse--determined during many hundreds of phone conversations with employers and employees and revealing no instances of unique job activities. Instead, company noncooperation took such forms as: We're just too busy or Company policy forbids participation or We can't favor some employees over others; you'd have to send us a questionnaire for everyone [which we could not do without violating sampling requirements] or We're in the middle of changing our whole accounting system; and so on in that vein. Employee noncooperation was characterized by such comments as: She's on vacation or He's been switched to another department or She doesn't work for us any more or Gee, I just forgot or I'm really too busy or You don't need me; Miss Evans sent back your questionnaire, and we all do the same thing around here; and so on in similar vein. None of our many hundreds of phone conversations suggested distinctive job duties among uncooperative employers or employees. It is therefore judged that nonresponse has not affected our findings.

Another kind of question about generalizability arises from an inquiry into entry-level employment that happened to secure numbers of responses from higher-level persons as well. There is, however, no population distribution against which respondent distributions for job level could be compared. Thus: although 20 percent of our respondents are "clerks," this is not to say that 20 percent of all bookkeeping/accounting employees are clerks; although 70 percent of our respondents prepare credit memos, this does not mean that 70 percent of all bookkeeping/accounting employees prepare credit memos. In short, our findings across all 597 New York City questionnaire respondents are not a mirror of all employment in the field. Instead, it seems reasonable to assume that the respondents at the various job levels do represent those at those job levels--were a sample to have been drawn from a population so defined.

What is generalizable, then, are findings pertaining to subclasses of respondents: e.g., those for educational and work-experience background in relation to job level and job duties and those that discriminate between

entry-level and higher-level employment and background characteristics. Illustratively: Recordkeeping students infrequently secure bookkeeping employment; New York City respondents with no job-relevant schooling do as well as those with only high school training; 3 percent of entry-level persons but 24 percent of higher-level persons "close income and expense accounts"--and so on into the very many findings for various subclasses of respondents.

In summary, without any claim for representativeness of findings across all 597 NYC respondents, those for various subclasses identified in ways pertinent to curriculum modification for entry-level employment appear to be usable for that purpose.

Labor Department Job Description of Advanced Computerization

NEW YORK STATE DEPARTMENT OF LABOR
Division of Employment

OMB 44-R0722

JOB ANALYSIS SCHEDULE

Estab. & Sched. No. 352-700-47-5

1. Estab. Job Title SENIOR ACCOUNTING CLERK-CASH/RECEIVABLES
2. Ind. Assign. Wholesale Trade
3. SIC Code(s) and Title(s) 5092 - Petroleum and Petroleum Products

DOT Title _____ Code 210.388
Ind. Desig. Clerical WTA Group P-280 Computing & Related Recording

4. JOB SUMMARY:

Reviews, totals, proves, and codes cash-receipts memoranda (remittance advices) for computerization, posts cash-receipts data to computer, using 2260 Display Station, identifies and lists over and short payments for follow-up, and performs related clerical tasks.

5. **Job Definitions:**

Processes cash-receipts source documents for computerization and posts to computer, using 2260 Display Station: Reviews payments-received advices (documentation) for completeness. Recomputes batch totals, using adding machine, and compares for accuracy with tapes received with advices. Makes corrections as necessary. Enters initials and identifying codes on advices and cover sheet, referring to code book as necessary. Lists reversing entries needed to clear small items, such as time discounts not taken. Depresses keys on typewriter-style keyboard of 2260 Display Station (g) to cause index to appear on television-type screen. Selects and types index number for category of payments being processed to cause appropriate blank form to appear on screen. Depresses keys to move Cursor (g) to starting point on screen and depresses keys to display date, identifying codes, and amounts on screen. Depresses keys to display new blanks as necessary and to display automatically computed sub-totals and totals. Observes screen for signal that entries do not balance and for other computer-programmed error signals. Redisplays completed entries on screens and compares in detail with source documents to locate errors. Backspaces to reach erroneous entry on screen and types in corrected entry. Presses key to feed completed and corrected entries into computer for electronic data processing, recording, and storage. Compares payments-received advices with customer-charge listings to identify over and short payments and notifies designated personnel by memo. Answers phone inquiries regarding cash-receipts matters.

SENIOR ACCOUNTING CLERK-CASH/RECEIVABLES
Sched. #352-700-57-5

7. General Education

   a. Elementary 8 High School 4 Courses any

   b. College ____ Courses ____

8. Vocational Preparation

   a. College 1 year Courses College Accounting

   b. Vocational Education -- Courses ____

   c. Apprenticeship --

   d. Inplant Training ____

   e. On-the-Job Training 64 hours

   f. Performance on Other Jobs One year as BUNKER BILLING CLERK (SE) or 3 years in any jobs in accounting field in other Estabs.

9. Experience Same as 8F.

10. Orientation 2 days.

11. Licenses, etc. ____

12. Relation to Other Jobs and Workers

    Promotion: From Bunker Billing Clerk To Sr. Acct. Clerk - Accounts-Receivable

    Transfers: From Comparable Position in other sections of Treasurer Dept. To Comparable Position in other sections of Treasurers' Dept.

    Supervision Received Section Head

    Supervision Given None

13. **Machines, Tools, Equipment, and Work Aids**

2260 Display Station - A table-mounted device designed to feed data into an electronic computer for both processing (e.g. effecting arithmetic calculations) and storage, and to retrieve the stored or processed information from the computer. Ledger data is stored on magnetic tape but hard-copy accounting documents are printed out and retained for historical reference. The display station consists of a typewriter-style key-board and an eleven-inch Cathode-Ray Tube similar to a television picture tube. As information is entered or retrieved via the keyboard it appears for inspection as a Screen on the face of the tube. A screen may be a complete assembly of information, such as an index of numerical codes, or it may be a display of blank lines and columns to be filled in with appropriate data by the operator. A point of light, known as a Cursor, indicates the spot on the screen at which a letter or other symbol will appear if one of the keys is depressed. The cursor can be moved to the desired spot on the screen by pressing the space bar, back-space key, etc., just as the carriage would be moved on a typewriter.

In addition to the usual alphabetical, numerical, back-space, shift, and other keys and bars of a typewriter, the keyboard includes special-purpose buttons to activate the computer printer, to enter data into the computer, to move the cursor, and to flash retrieved data onto the screen. There are also special keys to erase a screen or portions of it. The display station is manufactured by the International Business Machines Corporation.

SENIOR ACCOUNTING CLERK-CASH/RECEIVABLES
Sched. # 352-700-57-5

15. Description of Tasks:

1. Prepares cash-receipts data for computerization: Receives batched Remittance Advices and related papers from Treasurer's Department for processing. Separates outside-customer advices from affiliate-company advices to facilitate distribution of bookkeeping entries to proper accounts. Totals remittance amounts daily, using adding machine, and compares batch totals with adding-machine tapes received with batches to verify accuracy. Compares remittance advices and tapes item by item to locate error if difference is found, and makes corrections or advises appropriate personnel of need for correction. Enters identifying codes on remittance advices, referring to code book if necessary. Scans advices and attachments for completeness and searches files or contacts appropriate personnel to obtain missing data, such as invoice numbers. Lists reversing entries for subsequent computerization to clear small items, such as time discounts not taken by customer because of expiration of discount period. Records date, identifying codes, and totals on cover sheet, subtracts adjustments from total or vice versa, and enters adjusted total to provide control for use of company accounting personnel. Assembles papers for posting to computer.

(60%)

2. Posts cash-receipts data to computer: Arranges remittance-advice batches and related papers on desk alongside 2260 Display Station for convenience in processing. Switches on display station. Types identifying code of Initialization Criteria index and presses "enter" key to cause index to appear on Cathode-Ray Tube. Selects index number for type of batch being processed, such as "dollar receipts" or "sterling receipts." Types index number and depresses key to cause corresponding Screen to appear. Depresses keys and/or bars to move Cursor to starting position on screen. Transcribes (types) batch total from adding-machine tape to screen. Moves cursor to specified line and enters amount and identifying number of first remittance advice. Moves to next line, enters next remittance, and repeats procedure until all lines are used. Depresses key to replace completed screen with blank screen showing electronically computed sub-total at top. Repeats procedure until all remittances have been entered. Back-spaces and re-types as necessary to correct erroneous entry. Enters date and initials upon completion of final screen and depresses key to effect computation and screening of remittance-entry total. Observes screen for "Pack [batch] does not balance" signal indicating difference between tape total and entry total. Presses keys to display completed screens one at a time if unbalance is signalled and compares entries, item by item, with remittance advices to locate error. Makes corrections as necessary. Presses key to display Booking Criteria index. Selects appropriate criterion and presses key to display corresponding screen. Enters (types) date, initials, account number, and identifying codes. Observes screen for error signals and makes corrections as necessary. Presses key to feed completed entries into computer for electronic data processing and recording. Notifies designated co-worker of need for service when system malfunctions.

(20%)

3. Identifies and lists over and short payments for follow-up: Compares amounts on remittance advices with computer printout of customer charges to identify over and short payments. Prepares memos of over and short payments and forwards copies to designated personnel in Controller's and Treasurer's Departments for action. Enters for reference on memos, from memory or by consulting list, names of employees responsible for follow-up.

(10%)

4. Performs miscellaneous related clerical tasks: Answers phone inquiries from Treasurer's Department regarding cash-receipts matters. Carries out other special assignments as directed by Section Head.

(10%)

17. General Comments

Re: Item 15, Description of Tasks, Task #2

This job, after a recent restructuring, represents the first step in a technological revolution in computerized accounting. The changeover should give us a fairly good picture of how other bookkeeping jobs in this establishment -- and ultimately in much of industry as a whole -- will look after the introduction of the CRT (cathode-ray tube) for direct input of accounting data to the electronic computer. It is expected that about 90% of the firm's accounting data will be entered by this means.

Prior to the conversion, the SENIOR ACCOUNTING CLERK-CASH/RECEIVABLES prepared, coded, checked, and balanced detailed journals of cash receipts for transcription by Keypunch Operators to punched cards for computer input. Today the paper-and-pencil journalizing has been eliminated and the clerk posts cash receipts directly from source documents to the computerized ledger, utilizing the CRT 2260 Display Station. The preparation of punched cards as an intermediate step is no longer necessary.

The changeover was scheduled to take place in mid-April 1972 but technical difficulties with electronic equipment and programming forced postponement. This particular job was finally converted in August. The other bookkeeping-related jobs in the Aviation-Marine Section will be converted to direct input by about April 1, 1973 and those in the Cargo-Trading-and-Supply Section by -- it is expected -- year end. Meanwhile, most bookkeepers in the two sections are getting in-service training on the CRT.

The Systems Analyst-Accountant team which is guiding the development of the new system explained to us the reasons for the changeover and its probable effect on labor-market demand, job duties, hiring requirements, and accounting procedures. The purpose, they emphasized, is not to cut expenses. Rather, it is to improve the timeliness and availability of data -- or, as another Accountant expressed it, to expedite the retrieval of critical accounting information. The CRT skips the keypunch step and thus offers instant input. By giving direct access to the computer data bank via its keyboard it also makes possible instant retrieval. Once the entire accounting system is on line with the CRT, even a company-wide balance sheet as of one particular moment could conceivably be obtained by punching the keys of the display station with instructions to the computer to print it forthwith. No more need to wait till the end of the month for a printout. The possibilities, moreover, would not be limited to standard computer-programmed reports. Thus a company official might want a breakout of selected data. The Bookkeeper or Accountant could search out the information in the data bank via the display-station keyboard and viewing screen. Then, by pressing a button, he could obtain a printout of the specified information in report form.

While all of this eliminates the need for such workers as Keypunch and Comptometer Operators there will be little if any change in the demand for Bookkeepers, according to the development team. As of now they see a saving of no more than ten to fifteen percent on bookkeeping jobs. Furthermore, newly evolving jobs in computer maintenance and programming should offset the reduced need in the clerical field.

As for Bookkeeper training requirements, any changes in this area will result from revised accounting procedures dictated by the new technology. Accounting theory will not be affected -- double entry will still be the basis of the system. Any changes will be in the mechanics and speed of input and retrieval and in the takeover by the computer itself of routine calculating, account-selection, and audit-checking tasks. Thus the operator can routinely enter raw data through the CRT without necessarily knowing a debit from a credit.

However, background knowledge is a help, or even a near necessity, in almost any occupation which involves a systematic process. A Calculating-Machine Operator could hardly multiply and divide on the calculator without at least knowing elementary-school arithmetic. Even a mechanized Bookkeeper, according to the team Accountant, should understand bookkeeping theory and practice. Beyond routine recording, the sophisticated use of the CRT to search out data would call for some theoretical knowledge.

In addition to bookkeeping training as such, a basic (not in-depth) introduction to computers would be helpful. Practical hands-on familiarity with peripheral equipment including the CRT would be valuable and might well be incorporated in bookkeeping courses. The Accountant and the Systems Analyst concur in this.

In a conversation with the Analyst, the team Accountant and the Aviation/Marine Section Head (also an Accountant) mentioned that certain personal traits will gain importance under the new system. One of these is memory, which would reduce time-consuming dependence on such work aids as code books.

Another valuable trait would be imagination, because CRT bookkeeping is not necessarily the cut-and-dried procedure it superficially appears to be. In entering or retrieving data the operator can bypass certain intermediate steps to reach the appropriate data-storage area. Imaginative use of available short cuts will increase efficiency.

It should be emphasized that business will not switch to CRT bookkeeping overnight. While the CRT has been used for other purposes for a number of years, its utilization in accounting is brand-new and will take some development. So far as we know, only one other company -- a publisher -- has tried it, and in a less innovative way. That establishment uses it simply as a machine for posting from vouchers and previously prepared journals directly into the computerized general ledger (See JAS #352-500-49-1). Other firms which are computerizing for the first time are using punched tape and cards, and contemplate nothing more advanced than optical scanning. And, of course, smaller businesses will still find manual or machine bookkeeping more suitable to their needs. The CRT revolution will be a slow one and probably limited at first to very large operations.

INSTITUTE FOR RESEARCH AND DEVELOPMENT IN OCCUPATIONAL EDUCATION

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Office of Teacher Education
City University of New York

*Executive Committee

Fall 1972

Gentlemen:

This university needs your cooperation in providing New York City employers with better trained personnel in the fields of recordkeeping, bookkeeping and accounting. We are working in cooperation with the New York State Departments of Commerce and Labor, and your firm turned up as a member of a random sample of all New York City employers. Your cooperation with us will take only a few minutes of your time and will contribute in the long run to filling your personnel needs.

Here's the story. Technological developments have influenced the work of bookkeepers. But in many instances high school instruction has not kept up with these developments. It needs to be updated to bring it into closer accord with what today's bookkeepers actually do.

As a first step in modernizing bookkeeping instruction, The New York State Department of Education asked The City University of New York to determine the actual job activities of "entry-level" bookkeepers and accounting clerks (not data processing personnel). Our interest is not in the highly experienced full-charge or head bookkeeper who maintains a full set of books, but in persons who have job titles like those on the enclosed list: persons below the level of full-charge bookkeeper.

Here's how you can help. Please prepare a list, by name, of your entry-level bookkeepers, as described above. We will phone you in a few days and identify over the phone--using certain random procedures--a few of the persons on your list. Then we will send you a questionnaire for each of the persons selected, together with a return envelope and a brief explanatory letter for each one. All we ask you to do is to give the questionnaires and associated materials to the persons selected and to urge them to cooperate with us.

The cover letter for the employee asks that person to complete the questionnaire on his own time. Upon receipt of each completed questionnaire in the envelope provided, we will pay the person $3 for his time--amounting to about 20-30 minutes at most--more often about 10 minutes.

Participating firms and individuals will not be identified in any way in our report. We are interested only in job activities, not in any information that could be considered confidential.

Won't you please prepare a list of your bookkeeping employees. If you have it in hand when we phone you within the next few days, we can in a matter of minutes carry out the steps described above.

Sincerely yours

Leonard J. West

Leonard J. West
Professor and Project Director

fs

Enc. Job title list

COVER LETTER TO LARGE EMPLOYERS

INSTITUTE FOR RESEARCH AND DEVELOPMENT IN OCCUPATIONAL EDUCATION

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Here's the story. Technological developments have influenced the work of bookkeepers. But in many instances high school instruction has not kept up with these developments. It needs to be updated to bring it into closer accord with what today's bookkeepers actually do.

As a first step in modernizing bookkeeping instruction, the New York State Department of Education asked The City University of New York to determine the actual job activities of entry-level bookkeepers and accounting clerks and of the person in the small firm whose duties include, but are not necessarily confined to, bookkeeping.

Here's how you can help. Just ask your employee whose duties include bookkeeping to complete the questionnaire on his own time. If there is more than one such person, give it to the less experienced employee, together with the enclosed cover letter addressed "Dear Bookkeeper" and the return envelope. As stated in that cover letter, upon receipt of a completed questionnaire, we will pay the person $3 for his or her time.

Participating firms and individuals will not be identified in any way in our report. We are interested only in job activities, not in any information that could be considered confidential.

Please give your bookkeeping employee the questionnaire and cover letter inside the return envelope and urge that person to complete the questionnaire promptly and return it to us. Should you or your bookkeeping employee have any questions, phone me at 239-7430.

Sincerely yours

Leonard West

Leonard J. West
Professor and Project Director

fs

Encs. 3
Questionnaire
Cover ltr. for bookkeeper
Return envelope

COVER LETTER TO SMALL EMPLOYERS

TYPICAL ENTRY-LEVEL RECORDKEEPING/BOOKKEEPING JOB TITLES

General Titles

ACCOUNT CLASSIFICATION CLERK

ACCOUNTING CLERK
- Accounts payable clerk
- Accounts receivable clerk
- Advance payment clerk
- Cash posting clerk

AUDIT CLERK

BALANCE CLERK

BANK RECONCILIATION CLERK

BILLING CLERK
- Bill of lading clerk
- Invoice clerk

BOOKKEEPING MACHINE OPERATOR

COST CLERK
- Auto cost record clerk
- Labor classification clerk
- Operating cost clerk

CLASSIFICATION CONTROL CLERK

GENERAL LEDGER BOOKKEEPER

INSURANCE CLERK

PAYROLL CLERK

POSTING CLERK
- Cash journal clerk
- Journal clerk
- Order ledger clerk
- Posting clerk, stock record
- Sales distribution clerk
- Sales entry clerk

Additional Specialized Titles

BANKING
- Accounting clerk, payroll
- Accounting clerk, trust
- Christmas Club bookkeeper
- City cash collection clerk
- Commodity loan clerk
- Discount bookkeeper
- Interest accrual bookkeeper
- Investment bonds bookkeeper
- Reconcilement clerk
- Safe deposit box bookkeeper
- Savings bookkeeper
- Trust bookkeeper
- Trust investment clerk

HOTEL and RESTAURANT
- Night auditor
- Sales distribution clerk

INSURANCE
- Abstract examination clerk
- Bank ledger clerk
- Commission auditor
- Dividend deposit voucher quoter
- FHA loan auditor
- Medical voucher clerk
- Mortgage loan computation clerk
- Real estate expense posting clerk
- Remittance auditor
- Rent and miscellaneous remittance clerk
- Revolving fund clerk

LIGHT, HEAT and POWER
- Account information clerk
- Billing control clerk
- Bill recapitulation clerk
- Chart calculator
- Construction ledger clerk
- Cost estimating clerk
- Distribution accounting clerk
- Fixed capital clerk
- Tax record clerk

PRINTING, PUBLISHING and COMMUNICATIONS
- Circulation bookkeeper
- Classified advertising bookkeeper
- Toll billing clerk

TRANSPORTATION
- Branch agencies order clerk

WHOLESALE and RETAIL TRADE
- Mail order biller

ENCLOSURE TO LARGE-FIRM COVER LETTER

INSTITUTE FOR RESEARCH AND DEVELOPMENT IN OCCUPATIONAL EDUCATION

OFFICE OF TEACHER EDUCATION
CITY UNIVERSITY OF NEW YORK
1411 Broadway, New York, N. Y. 10018
212 / 239-7430

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City University of New York

*Executive Committee

Fall 1972

Dear Bookkeeper:

This University is trying to improve the training of bookkeepers. To do so, we need to determine what today's bookkeepers actually do.

You can help us by telling us what you do on your job. For that purpose we have enclosed a questionnaire and a return envelope. The questionnaire takes about 20-30 minutes to complete. When we receive your completed questionnaire, we will pay you $3 for the time you have spent.

You will notice that the descriptions of job activities that begin on the second page of the questionnaire are grouped into separate sections, under separate headings. Even though the heading might not seem to apply to you, it is especially important that you do not skip any section. Answer every question in every section. Only check marks are required. When you finish the questionnaire go over it again to make certain that you have not omitted any question (except, perhaps, for Nos. 21-23 on page 1).

The names of individuals and firms who cooperate with us will not be mentioned in our report. We are interested only in job activities, not in any information that could be considered confidential.

Thank you in advance for your assistance. We look forward to receiving your completed questionnaire within the next few days.

Sincerely yours

Leonard J. West

Leonard J. West
Professor and Project Director

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Encs. 2
Questionnaire
Return envelope

EXPLANATORY LETTER TO BOOKKEEPING EMPLOYEE

Please return this questionnaire to: Institute for Research and Development in Occupational Education
The City University of New York, 1411 Broadway, New York, NY 10018
(Phone: 239-7430)

SURVEY OF BOOKKEEPING AND ACCOUNTING JOB ACTIVITIES

Your name (Please print) _____ (Last) _____ (First) _____ (Initial) Today's date _____ (Mo./Day/Year)

Firm name and address _____ (Street address) _____ (City) _____ (Zip code)

Office Phone No. _____

Check (√) what applies to you

1. Age: 16-24 ___ 25+ ___
2. Sex: M ___ F ___

Do not write in this column

DIRECTIONS. As indicated, please check or circle or print your answers.

EDUCATION

3. High school graduate or equivalency diploma? Yes ___ No ___
4. If so, when? _____ (Year)
5. In high school did you study (check one of the six blanks below):

   No recordkeeping or bookkeeping _____

   Only recordkeeping 1 yr. ___ 2 yrs. ___

   Only bookkeeping or accounting 1 yr. ___ 2 yrs. ___ 3 yrs. ___
6. How many years did you attend (circle one at each level):

   Private business school 0 ½ 1 1½ 2

   Jr. or community college 0 ½ 1 1½ 2

   Senior college 0 ½ 1 1½ 2 3 4 5+
7. Did you earn a junior college certificate or degree? Yes ___ No ___
8. Did you earn a senior college diploma? Yes ___ No ___
9. How many post high school bookkeeping or accounting courses have you taken (circle one): 0 1 2 3 4 5+

PRESENT EMPLOYMENT

10. What is your present job title? (Examples: accounting clerk, accounts payable bookkeeper, accounts receivable bookkeeper, balance clerk, bookkeeping machine operator, payroll clerk, posting clerk, figures clerk, assistant bookkeeper, bookkeeper)

    Your title _____
11. How long have you worked for your present employer? Yrs. ___ Mos. ___
12. How long have you worked at your present duties for your present employer? Yrs. ___ Mos. ___
13. In your opinion could you have learned (or did you learn) to perform your present duties in the general field of recordkeeping/bookkeeping/accounting without previous school training?

    Entirely ___ Mostly ___ Partly ___ No ___
14. For your present duties in the field of recordkeeping/bookkeeping/accounting, did your employer require you to have:

    a. Previous school training in the field? Yes ___ No ___

    b. Previous job experience in the field? Yes ___ No ___
15. What percentage of your present job duties is directly in recordkeeping/bookkeeping/accounting? 25% ___ 50% ___ 75% ___ 90%+ ___
16. In your firm how good are the promotional opportunities in recordkeeping/bookkeeping/accounting? Good ___ Fair ___ Poor ___ Don't know ___
17. What is the title of the next higher position above yours?

    _____
18. Have you been promoted since beginning work for your present employer? Yes ___ No ___
19. If so, what was your job title just before your present one?

    _____
20. Circle the number that most closely represents what promotion depends on in your firm. 1 = mostly formal school training, 2 = mostly job experience and performance, 3 = school training and job experience about equally. 1 2 3

    If your present job is your first job, omit Questions 21-23 and continue with No. 24.

PREVIOUS EMPLOYMENT

21. On your first job in the field of recordkeeping/bookkeeping/accounting.

    a. What was your job title? _____

    b. How long did you hold that job? Yrs. ___ Mos. ___

    c. Did your employer require previous school training? Yes ___ No ___

    d. In your opinion could you have learned (or did you learn) to perform your duties without previous school training?

    Entirely ___ Mostly ___ Partly ___ No ___
22. What was your last job title for your previous employer—the one just before your present one?

    _____
23. Only in the bookkeeping field—not counting other jobs:

    a. For how many different employers have you worked (including your present job)? _____

    b. What is the total amount of your employment in the bookkeeping field for all employers? Yrs. ___ Mos. ___

    c. In your opinion could you have learned (or did you learn) to perform your bookkeeping duties without previous school training?

    Entirely ___ Mostly ___ Partly ___ No ___

PRESENT JOB DUTIES

Use of Business Machines

24. In a typical work week about how many hours do you spend at a typewriter (circle one):

    0 1 2 3 4 5 6 7 8 9 10 11-15 16+
25. If you do type, what sorts of things do you type? (Write in the short blank alongside each item, the number of hours per week you typically spend at typing that kind of item.)

    Letters or memos ___ Filling in standard forms or business papers (invoices, purchase orders, tax or payroll forms, checks, etc.) ___

    Statistical tables ___

    Reports ___ Other _____ ___

26. Name other machines you use on your job AND, in the short blank alongside each, write the NUMBER OF HOURS you spend at that machine in a typical week. (Examples: adding machine, comptometer, calculator, billing machine, bookkeeping machine, duplicator, check writer, cash register)

_____ ____ _____ ____

_____ ____ _____ ____

_____ ____ _____ ____

27. Does your employer use electronic data processing equipment or services (punch cards and/or computer equipment) to generate bookkeeping and accounting records? Yes_____ No_____

28. If your answer to Question 27 is yes, please check the areas below to which electronic data processing applies. (If you are not sure, ask your supervisor.)

Payroll	_____	Accounts payable	_____
Sales	_____	Accounts receivable	_____
Purchases	_____	Inventory records	_____

Other (describe) _____

Job Overview

29. Circle the number that most closely represents the percentage of time in a typical week you spend in making calculations – both manually and by machine (adding totals, subtracting discounts, computing percentages, checking arithmetic, and so on).

0 10 20 30 40 50 60 70 80 90+

30. Circle the number that most closely represents the percentage of time in a typical week you spend in routine clerical copying or transcribing of information from one record to another, not counting permanent financial records.

0 10 20 30 40 50 60 70 80 90+

31. In general, do you have final responsibility for your work, or is it usually checked or verified by someone else?

Mostly, I have final responsibility_____ Mostly, my work is checked by someone else_____

32. What is the job title of your immediate superior?

_____

33. Show which of the following JOURNALS you use on your job by circling the number of money columns in that journal. If you do not use the journal, circle the X.

General	X	1	2	3	4	5	6	7	8	9	10	11+
Sales	X	1	2	3	4	5	6	7	8	9	10	11+
Purchases	X	1	2	3	4	5	6	7	8	9	10	11+
Cash receipts	X	1	2	3	4	5	6	7	8	9	10	11+
Cash payments	X	1	2	3	4	5	6	7	8	9	10	11+
Combination cash receipts and payments	X	1	2	3	4	5	6	7	8	9	10	11+

34. Do you post to the GENERAL LEDGER? Yes ____ No ____

35. Do you post to one or more SUBSIDIARY LEDGERS? Yes ____ No ____

36. If so, to which subsidiary ledgers? Name them.

_____

_____

_____

_____

_____

_____

DETAILS OF PRESENT JOB ACTIVITIES

INSTRUCTIONS. For each job activity, check in the PERFORM column either Yes or No to indicate if you perform that duty on your present job. THEN –

If your answer is Yes, check in the LEARN column to show where you learned to perform that activity. Check either the Sch (School) or the Job column—or check in both columns if both apply.

	PERFORM		LEARN	
	Yes	No	Sch	Job
(A) Sales or Services Rendered				
1. Do you decide or help to decide to whom credit should be extended?				
2. Do you keep records of merchandise stock numbers sold or types of services rendered?				
3. Do you list—by salesman, week, territory, or type of service—customers, subscribers, clients or patients?				
4. Do you prepare sales invoices or bills for services?				
5. Do you prepare credit memos?				
6. Do you keep records of sales taxes charged?				
7. Do you calculate for recording on sales invoices or bills: extensions, discounts, allowances, deductibles, taxes or freight charges?				
8. Do you list or total sales invoices, bills or credit memos?				
9. Do you make entries in a sales journal or a journal for services rendered?				
10. Do you make entries in a sales returns and allowances journal?				
11. Do you record C.O.D. sales in a journal?				
12. Do you calculate salesmen's commissions or expenses?				
(B) Cash Receipts				
13. Do you calculate discounts, allowances or partial payments before incoming checks are recorded?				
14. Do you calculate payments or partial payments received as grants or budgetary allocations?				
15. Do you enter incoming checks in a cash receipts journal?				
16. Do you record bank deposits in a cash receipts journal?				
17. Do you start each month a cash receipts journal with a cash balance from the previous month?				
18. Do you total cash receipts records, registers or journals?				
19. Do you make journal entries for cash received on installment sales?				
20. Do you use a cash register?				
21. Do you count cash received or prove correctness of cash on hand with totals in a cash register?				
22. Do you keep records of sales taxes collected?				
23. Do you collect cash from two or more registers and record the totals?				
24. Do you keep records of expenses, purchases or drawing paid for by coins and bills taken from daily receipts?				
25. Do you make entries for discounting notes payable?				
(C) Accounts Receivable				
26. Do you record or post invoices, bills, or credit memos to accounts of customers, subscribers, patients, clients or grantors?				
27. Do you post to accounts, checks or cash received?				
28. Do you key off or letter off entries in accounts?				
29. Do you find balances in accounts?				
30. Do you prepare statements of accounts?				
31. Do you list or prepare schedules of end-of-month balances of accounts?				
32. Do you age accounts receivable to identify how long they are past due?				
33. Do you keep records of accounts written off as bad debts?				

You're doing fine! Keep up the good work

	PERFORM		LEARN	
(D) Purchases o Services Re eived	Yes	No	Sch	Job
34. Do you prepare purchase orders or requisitions?				
35. Do you compare merchandise or services received with purchase invoices or bills received?				
36. Do you code purchase invoices or bills received to indicate the nature of the purchase or service?				
37. Do you record purchase quantities on inventory, stock, or open-to-buy records?				
38. Do you compare the total of purchase invoices or expense vouchers with amounts budgeted for them?				
39. Do you prepare credit slips for returned purchases or for errors on purchase invoices?				
40. Do you calculate due date on purchase invoices, vouchers or bills received?				
41. Do you prepare vouchers for purchases or contracted services?				
42. Do you enter purchases or bills for services in a purchases journal or journal for services received?				
43. Do you make entries in a journal that has departmental column headings?				
44. Do you enter vouchers in a voucher register?				
45. Do you make entries in a purchase returns journal?				
(E) Cash Disbursements				
46. Do you prepare stubs and checks for cash disbursements?				
47. Do you code checks or stubs by function?				
48. Do you enter issued checks in a cash payments journal?				
49. Do you make entries in a check register that is part of a voucher system?				
50. Do you verify correctness of cash journals by comparing balances in journals with balances in checkbook?				
51. Do you make entries relating to operating expenses, such as rent, telephone, electricity, etc?				
52. Do you make entries for proprietor's personal drawings?				
53. Do you reconcile the bank statement balance with the checkbook or cash journal balance?				
54. Do you make entries for bank charges and collection charges?				
55. Do you use a pegboard or other "one-write" system for cash receipts or cash payments?				
56. Do you record entries in journals for collection or payment of notes receivable or payable?				
(F) Accounts Payable				
57. Do you post purchase or return amounts in creditors' or vendors' accounts?				
58. Do you post to creditors' accounts the amounts of cash paid to them?				
59. Do you compare statements received from creditors with balances in their accounts?				
60. Do you list or prepare schedules for end of month balances in creditors' accounts?				
(G) Merchandise Records				
61. Do you keep cost records for manufacturing departments?				
62. Do you prepare charge slips to subcontractors for merchandise sent to them?				
63. Do you keep records of merchandise and money received from or due to subcontractors?				
64. Do you prepare charge slips or credit slips for merchandise shipped to or from branches or subsidiaries?				
65. Do you make journal entries for merchandise shipped or received on consignment?				
66. Do you price or total merchandise for physical inventory?				
67. Do you compare physical inventory count with inventory or stock records?				

	PERFORM		LEARN	
(H) Petty Cash	Yes	No	Sch	Job
68. Do you prepare petty cash slips or vouchers?				
69. Do you enter petty cash slips or vouchers in a petty cash book or journal?				
70. Do you post directly from the petty cash journal to the general ledger?				
71. Are you responsible for maintaining the petty cash box or drawer?				
(I) Payroll				
72. Do you prepare time cards for employees?				
73. Do you calculate time worked by employees?				
74. Do you calculate gross earnings of employees?				
75. Do you calculate piecework earnings by employees?				
76. Do you calculate payroll deductions for taxes, etc?				
77. Do you enter payroll information in a payroll book or register?				
78. Do you record payroll entries in a cash payments journal?				
79. Do you post directly from the payroll journal to the general ledger?				
80. Do you enter payroll information on individual employees' earnings records?				
81. Do you prepare forms for depositing at the bank of employees' and employer's payroll taxes?				
82. Do you make journal entries for depositing employer's and employees' payroll taxes?				
83. Do you total individual employees' earnings records at the end of each quarter?				
84. Do you prepare quarterly payroll tax reports for federal, state or city governments?				
85. Do you total employees' earnings records for the year?				
86. Do you prepare information for employees' W-2 forms?				
(J) Financial Statements				
87. Do you prepare sales or commercial rent tax returns?				
88. Do you prepare trial balances?				
89. Do you prepare work sheets for balance sheets or income statements?				
90. Do you prepare balance sheets or income statements?				
91. Do you prepare comparative balance sheets or comparative income statements?				
92. Do you prepare income tax or franchise tax returns for your employer?				
93. Do you use financial statements as a basis for preparing current ratios, working capital or merchandising turnover?				
95. Do you calculate the distribution of net profits for a partnership?				
(K) General Ledger and General Journal				
96. Do you keep records or accounts for mortgage interest and principal?				
97. Do you record entries in the general journal?				
98. Do you record entries in the general journal for appropriations granted to your department or fund?				
99. Do you make entries in the general journal for anticipated revenues for your department or fund?				
100. Do you post from the general journal to the general ledger?				
101. Do you record notes receivable or notes payable in the general journal or other journals?				
102. Do you record entries relating to interest income or interest expense?				

Don't give up now—you're almost finished!

	PERFORM		LEARN	
	Yes	No	Sch	Job
103. Do you reconcile accounts receivable or accounts payable with general ledger accounts?				
104. Do you record payroll entries in the general journal?				
105. Do you reconcile payroll records with general ledger accounts?				
106. Do you prepare adjusting entries for bad debts or depreciation?				
107. Do you make adjusting entries for accrued expenses (unpaid salaries, etc.)?				
108. Do you prepare adjusting entries for deferred expenses (unexpired insurance, supplies on hand, etc.)?				
109. Do you make adjusting entries for accrued or deferred income?				
110. Do you make correction entries in journals and ledgers when mistakes are found?				
111. Do you make entries for recovery of bad debts previously written off?				
112. Do you keep drawing and capital accounts for an individual proprietorship or partnership?				
113. Do you make entries for earnings and dividends in capital stock, retained earnings, and other capital accounts?				
114. Do you make entries to close income and expense accounts at the end of the fiscal year?				
115. Do you make, if necessary, reversal entries in the general journal?				
(L) Data Processing				
116. Do you make calculations in connection with entering financial data on coding or input sheets for data processing?				
117. Do you enter financial data on coding/input forms for data processing?				
118. Do you compare data processing coding/input forms with original bookkeeping and business papers?				
119. Do you enter coding information on business papers in preparation for data processing?				
120. Do you compare or balance data prucessing printouts with original business papers?				
121. Do you enter corrections on coding/input forms for data processing?				
122. Do you enter inventory information on coding forms?				
123. Do you examine data processing records to verify complaints?				
124. Do you examine data processing records to find requested information?				
125. Do you prepare flow charts for data processing systems?				
(M) Miscellaneous				
126. Do you keep a register of your organization's insurance policies?				
127. Do you file claims for losses covered by insurance?				
128. Do you calculate amounts of interest income or interest expense?				
129. Do you record entries in notes receivable or notes payable registers?				
130. Do you keep a subsidiary ledger or other record for plant, equipment or other fixed assets?				
131. Do you keep subsidiary ledgers for individual grants or appropriations?				
132. Do you make entries in journals that differ from their column headings (double posting, negative entries, etc.)?				

Just two more questions below, please

Have we forgotten anything? Is there anything else you do in the general field of recordkeeping/bookkeeping/accounting that we have not asked about? If so, please list those activities below. Assign a number to each, beginning with 133.

133. _____

FINALLY, what are your ten major activities, the ones that make up most of your work? Review the questions in Sections (A) through (M) to which you answered yes, plus those you may have listed at the left (Question 133). Then, enter in the blanks below the numbers of those activities. Write the number of your most frequent activity in blank 1, the number of the next most frequent activity in blank 2, and so on up to a maximum of ten.

1. _____ 2. _____ 3. _____ 4. _____ 5. _____

6. _____ 7. _____ 8. _____ 9. _____ 10. _____

You have been most cooperative. MANY THANKS! Check to see that you have left no questions unanswered and return your completed questionnaire in the return envelope that has been provided.